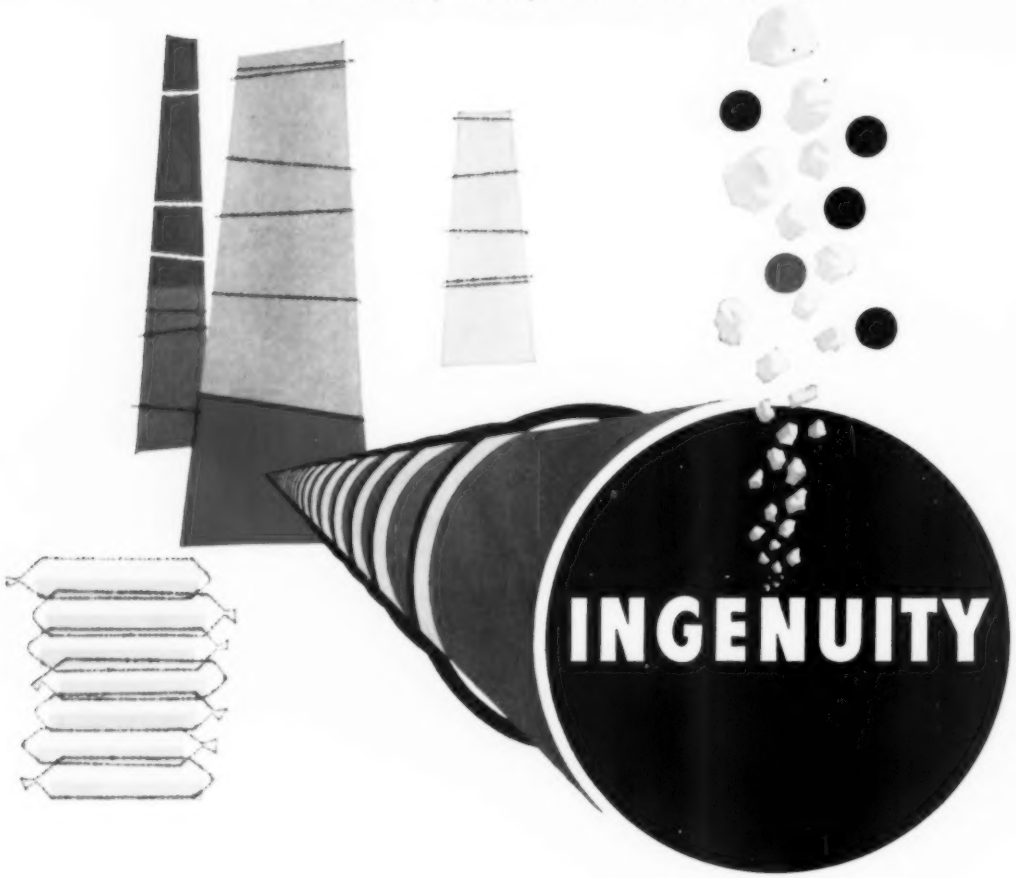
# PIT and QUARRY

JANUARY 1959

## REVIEW AND FORECAST

SEE PAGE 69

call KE for plant expansion or new facilities



1,250,000 barrel cement plant addition recently completed by KE for Marquette Cement, one of world's largest cement producers.

## has made KE a major engineer-contractor serving the Minerals Industry

Placing of four fully-lined mills in a few hours instead of days—a unique center pier kiln drive —a 2,700′ cement transport "airway." With these and many more planned innovations and short-cuts, Kaiser Engineers completed Marquette Cement's Cape Girardeau plant expansion quickly and economically. Construction cost and time were well below industry average.

Mining, transportation, beneficiation, materials handling, processing in cement, gypsum, coal, ferrous and non-ferrous metals facilities—these are but a few of the fields wherein KE serves the Minerals Industries—from economic analysis through start-up.

KE ingenuity—multi-industry experience, keenly applied—can benefit your next facility. Let us show you how.

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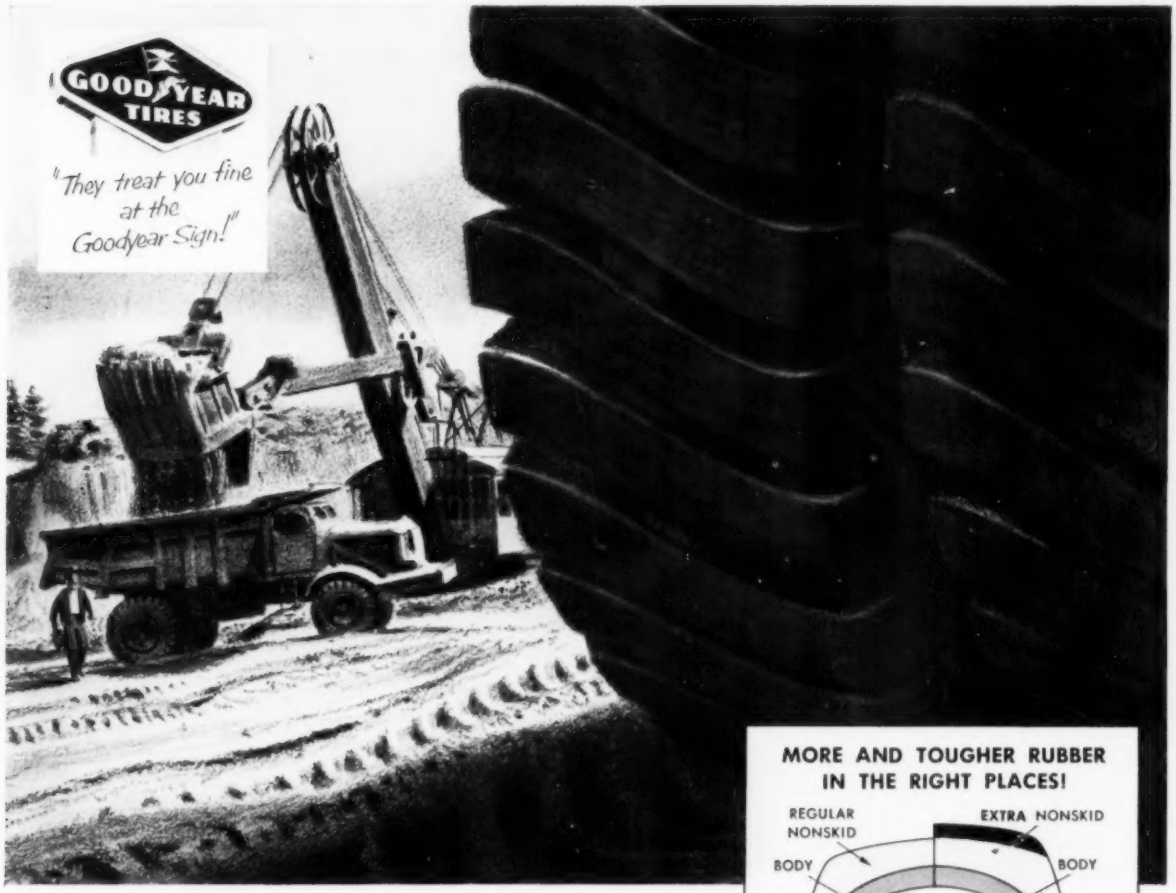
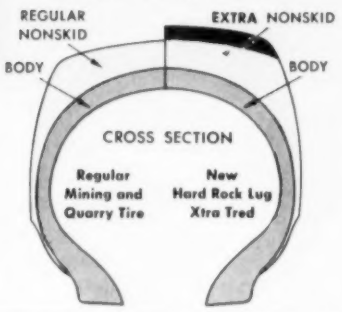



MORE AND TOUGHER RUBBER IN THE RIGHT PLACES!

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The new Hard Rock Lug Xtra Tred is designed and built *specifically* for mine and quarry work.

Precise engineering of extra tread-rubber–extra-tough – results in up to 50% longer tread life! Reinforced lugs, bonus shoulder heft and huskier sidewalls endure unbelievably tough punishment.

And all this standout new tire engineering is backed by a body of Goodyear's exclusive Triple-Tough 3-T Nylon Cord–reduces bruise-breaks and blowouts to an all-time low–the greatest tire *saver* in 24 years!

Better check into the new Hard Rock Lug Xtra Tred–at your Goodyear dealer's NOW! Goodyear, Truck Tire Dept., Akron 16, Ohio.

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**MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND**

Xtra Tred–T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

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# Get extra pipe line life

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This 14-inch-diameter Armco Special Analysis Steel Pipe carries an abrasive sand and gravel mixture from the dredge to the processing plant at the McGrath Sand and Gravel Company's Peoria County, Illinois, operation.

Your costs per yard of material handled are *lower* with long-lasting Armco Special Analysis Steel Pipe. The extra abrasion resistance of Armco Pipe has been proved in all types of dredging and hydraulic mining operations.

You'll also find extra savings and convenience in the wide range of sizes, lengths, and joints.

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You can specify exact lengths up to 50 feet. Long lengths save joints, speed installation.

### Variety of joints and end finishes

Armco Pipe can be supplied with flanges or with machine-reduced or expanded ends. Pipe ends can also be prepared for standard couplings, welding or various special joints.

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# PIT and QUARRY

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX


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Built primarily for asphalt plant—has optional surge stockpile, flexible flowsheet.

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**SHAFT-KING SPEED-REDUCTION DRIVES**

as easy to put on as a smile . . .

*and over 100,000 installations have proven they will keep you smiling!*

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The Original . . . and still the best shaft-mounted Speed-Reduction Drive. Shaft-King's exclusive TAPER-BUSHED construction assures fast, easy installation, dismounting and relocation . . . indefinitely. Exclusive torque-arm overload release provides positive protection against overloads. Little or no maintenance . . . set and forget! Low initial cost. Immediate delivery from your local American Distributor who carries everything for efficient power transmission through belts. Or write for Catalog SRD-58.

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# pit and quarry

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# NORTHWESTS
## money makers in ROCK!

This is no advertising boast! You can check it in dozens of places. It is the big reason why so many quarries, big and little, from coast to coast use Northwests.

This Model 6, 1½-yd. Northwest is in the big quarry of the Algood Limestone Co. at Algood, Tenn. The machine handles agricultural lime stone and aggregate from a 100 ft. face.

This is the second Northwest Algood Limestone Co. has owned—another repeat order that testifies to the high quality of Northwest performance.

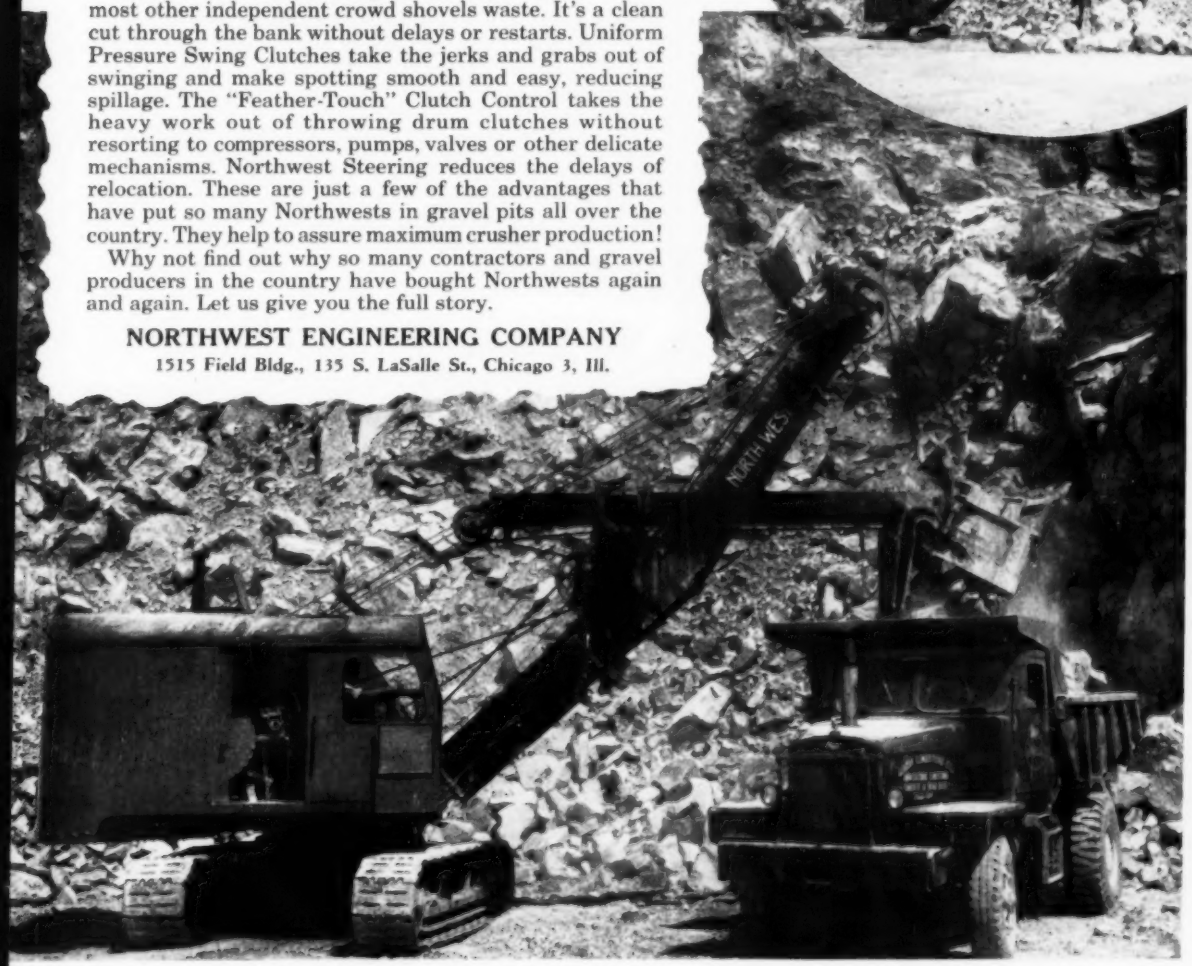
Like all Northwests the Model 6 is a *real* Rock Shovel —no stutter—no restarts—no dipper juggling.

The Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste. It's a clean cut through the bank without delays or restarts. Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and make spotting smooth and easy, reducing spillage. The "Feather-Touch" Clutch Control takes the heavy work out of throwing drum clutches without resorting to compressors, pumps, valves or other delicate mechanisms. Northwest Steering reduces the delays of relocation. These are just a few of the advantages that have put so many Northwests in gravel pits all over the country. They help to assure maximum crusher production!

Why not find out why so many contractors and gravel producers in the country have bought Northwests again and again. Let us give you the full story.

**NORTHWEST ENGINEERING COMPANY**

1515 Field Bldg., 135 S. LaSalle St., Chicago 3, Ill.



# NORTHWEST *Always Ready to* GO

**NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES**

| SHOVELS | CRANES | DRAGLINES | PULLSHOVELS | TRUCK CRANES |
|---|---|---|---|---|
| ¾ Yd. to 2½ Yd. Capacity | 13-Ton to 50-Ton Capacity | ¾ Yd. to 3 Yd. Capacity | ¾ Yd. to 2½ Yd. Capacity | 25-Ton and 35-Ton Capacity |

# NOW!

## more "carry-out" capacity

**New Specially Designed Page Automatic Bucket for Sand...Gravel... Quarry Operations**

Dotted line shows higher, longer basket of Page Sand & Gravel Bucket

- **Longer, Higher Basket for more "carry-out" capacity on every swing**
- **USS "T-1" Steel Construction . . . "T-1" has more than 3 times the strength of ordinary steel; Offers LONGER LIFE . . . LESS REPAIR AND MAINTENANCE COSTS**

New Page Sand & Gravel Bucket uses shorter dump rope for underwater digging. This throws front of bucket sharply back when hoisting to prevent spillage, and to utilize built-up basket for additional capacity.

Here's a new Page Automatic Bucket specifically designed for more profitable sand, gravel, and quarry operations. Made of high strength USS "T-1" alloy steel for maximum resistance to wear and abrasion, the new Page Sand & Gravel Bucket has a built-up basket to give up to 25% more carry-out capacity, assure higher production and more efficient dragline operation.

The higher, longer basket(shown by the dotted line)will move more material per swing; it is especially effective in underwater digging, where the material has a natural tendency to flow with the water in a direct line from the rear top of the basket to the lip.

Page Sand & Gravel Buckets are made in capacities from ⅜ cubic yards and up. They are available for quick delivery.

***Write for special Sand & Gravel Bucket circular***

**Page**

**Automatic Dragline Buckets**

**Walking Draglines**

*If it's a* PAGE... *It* DIGS

**PAGE ENGINEERING COMPANY**

**CLEARING P.O., CHICAGO 38, ILL.**

DIAMOND **STATIONARY PLANTS**

# How Diamond put a gravel deposit in business

**Check This Layout**

- a trap loading hopper equipped with a grizzly and plate feeder
- three 24″ lattice framed belt conveyors
- 2 wash boxes
- a 3 deck and a 2 deck water screen equipped with spray bars
- a screw washer
- a 10″x36″ jaw crusher
- a 30″x20″ roll crusher
- a 24″ DorrClone
- 4 portable stockpiling conveyors

Diamond makes everything for the aggregate producer:

**Jaw Crushers • Roll Crushers • Conveyors • Screens and Washers • Feeders and Bins • Portable and Stationary Crushing Plants for Rock and Gravel.**

The owner of a Northern Illinois gravel deposit had a problem. A ready market existed for finished aggregate products that could meet the rigid specifications of state and local highway programs. Could such materials be produced from his property in adequate quantity . . . and at a profit. He turned to Diamond . . . today he has a profitable operation.

Experienced engineers surveyed the site, checked the type of material in the pit, verified the finished products wanted, and determined the production capacity that would be needed. Then they submitted detailed sketches, specifications and costs for a complete plant layout. Approval was received and in a matter of weeks another Diamond engineered and built plant was making money for its owner.

Arranged in a space-conserving layout, the plant is producing four profitable materials at the rate of 70 to 150 cu. yds. per hour, depending upon the amount of each product desired; washed concrete sand, washed natural gravel in two sizes (1¼″ to ½″ and ½″ to #4 mesh), and 100% crushed, screened and washed gravel in either 1″ to #10 mesh or ⅜″ to #10 mesh. All meet state, county and township road specifications.

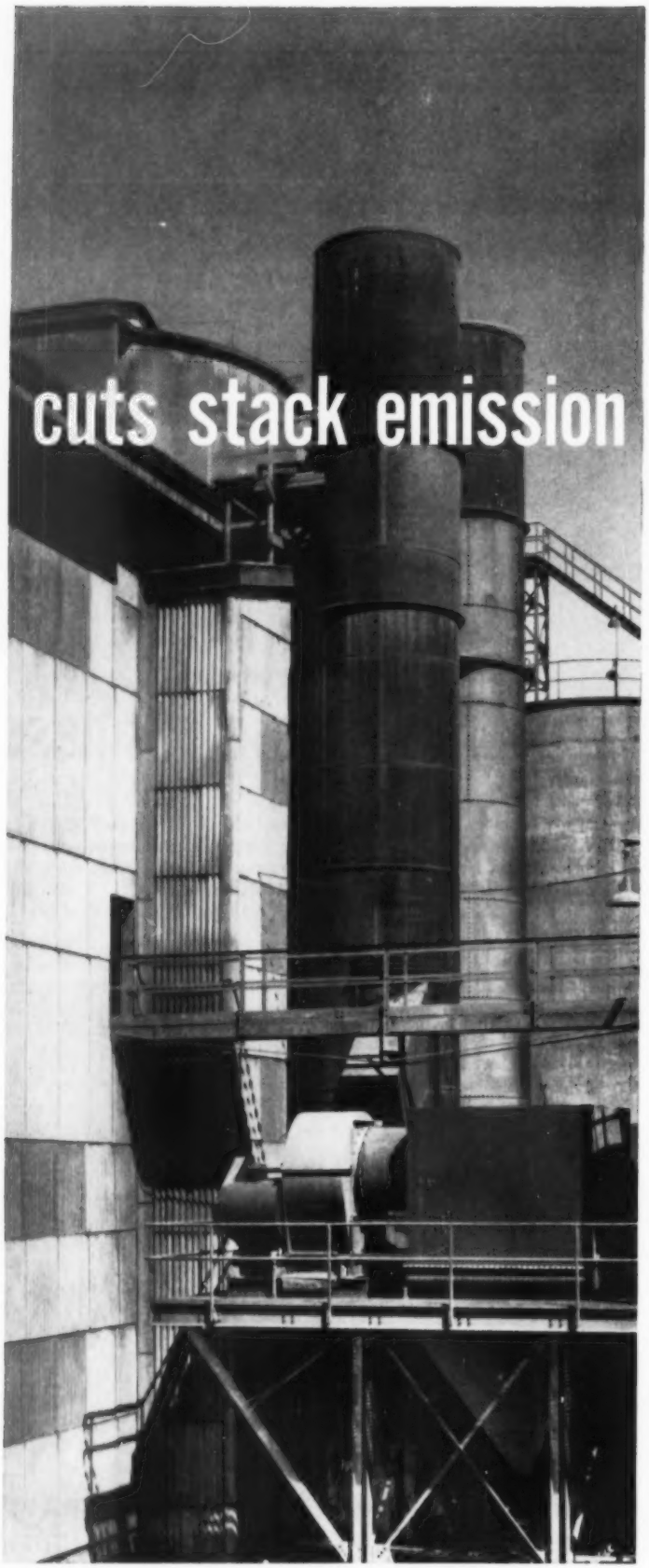
The entire plant is electrically driven with all wiring underground. It requires a minimum of supervision with one man handling the operation . . . typical of Diamond's thoroughness and ability to provide the best knowhow and equipment for any size job. It's a good example of how Diamond can tie-up high capacity, smooth operation and low production costs in one neat profit package for you. See your Diamond Distributor today.

**DIAMOND IRON WORKS**

*DIVISION*

**GOODMAN MANUFACTURING COMPANY**

*Halsted Street and 48th Place • Chicago 9, Illinois*




# Hagan Dust Collector proves 96.5% efficient

## on clinker cooler at Dragon Cement Company

One of two 173 tube units recently installed at the Dragon Cement Company, Northampton, Pa., this Hagan Dust Collector passed ASME Power Test Code No. 21 with flying colors. The test was conducted to determine efficiency and to show compliance with requirements of Lehigh Valley Air Pollution Control. Conducted to the satisfaction of R. Emmet Doherty, Director of LVAPC, results indicated that the Hagan Dust Collector, handling 38,000 cfm at 490F, was operating at the highly satisfactory efficiency of 96.5%.

Local codes demand a stack emission of not more than 0.25 grains per cubic foot. The Hagan Dust Collector is holding stack emission to *0.0437 grains per cubic foot, less than one-fifth of the permitted total.*

The two collectors recover more than 9500 pounds of cement dust every 24 hours. This is returned to process, so that not only is a local dust nuisance ended, but valuable product is salvaged.

Efficiency and product recovery are two of the many reasons why Hagan Collectors provide substantial savings to industry. But the most economical feature of the Hagan Collector is its ability to resist abrasion. Selective Particle Acceleration, an exclusive Hagan development, reduces wear on tubes to a minimum. Hagan Collectors, working on flue dust and other extremely abrasive materials, show negligible wear after more than three years service.

Put this economical Collector to work in your plant. Ask a Hagan engineer to explain how the Hagan Collector can save you money in your plant, or write for Bulletin MSP-124A.

**HAGAN** CHEMICALS & CONTROLS, INC.

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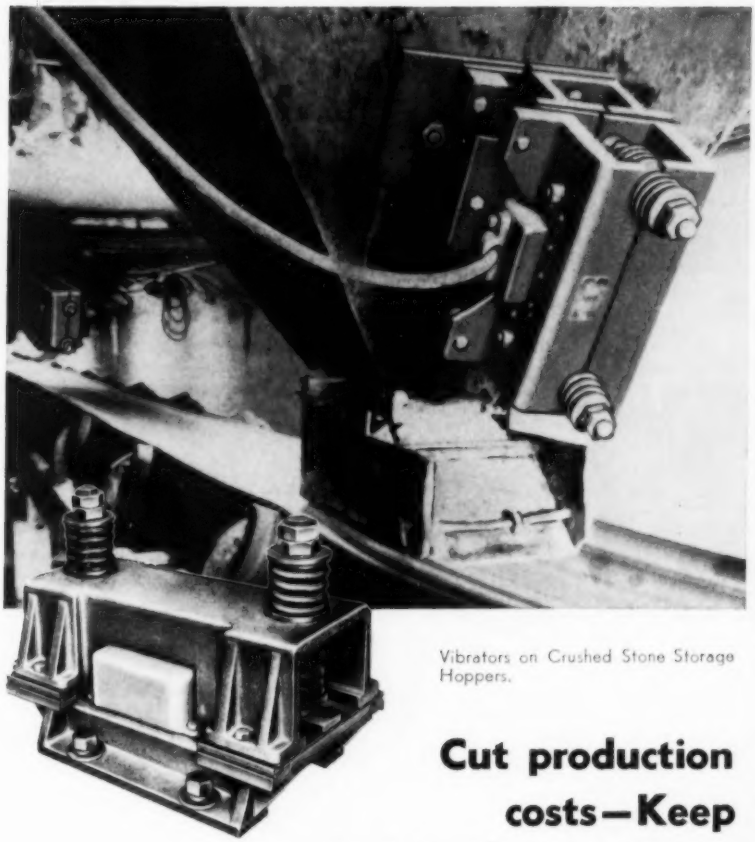
# SYNTRON Pulsating Magnet
# BIN VIBRATORS



Vibrators on Crushed Stone Storage Hoppers.

## Cut production costs—Keep materials flowing freely

SYNTRON Electromagnetic Bin Vibrators set up waves of powerful, instantly controllable vibrations, 3600 per minute, to move even the most stubborn materials.

SYNTRON Bin Vibrators offer the most efficient and effective method of keeping sand, gravel, and even heavy rock and stone from plugging bins, hoppers and chutes. They eliminate damaging pounding and rodding.

Simplicity of design eliminates mechanical wearing parts and offers dependability of operation with low maintenance.

SYNTRON Bin Vibrators are available in sizes for every bin or hopper. Easy to install, easy to operate, easy to maintain.

If your production is being slowed by materials plugging in bins, hoppers or chutes call SYNTRON

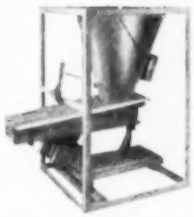
*Write for complete catalog data—FREE*

## Other SYNTRON Equipment of proven dependable Quality

PACKERS & JOLTERS

SHAKER CONVEYORS

CAR SHAKERS

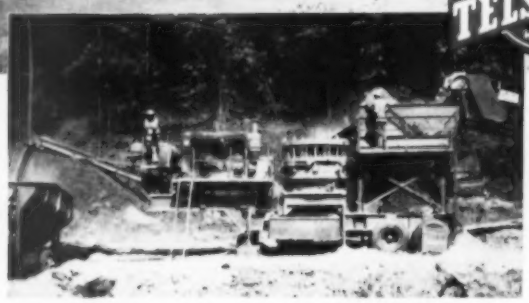


DRY FEEDER MACHINES

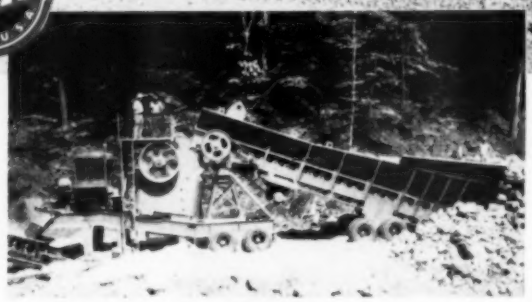
TEST SIEVE SHAKERS

**SYNTRON COMPANY**
**385 Carson Ave. Homer City, Penna.**

"this Telsmith portable plant has given us complete satisfaction in operation and production"



Telsmith Single Pass Secondary Crushing Plant with 489-S Gyrasphere Crusher and 4-ft. x 8-ft. double deck screen.



42-in. x 33-ft. Telsmith Portable Apron Feeder and 30-in. x 42-in. Telsmith Welded Steel Frame Roller Bearing Jaw Crusher.

Telsmith 10-yd. capacity Portable Surge Bin with 36-in. discharge conveyor.

**On airport job at Charleston, W. Va. —Telsmith Portable plant of Haynes Construction Co. of Bluefield, W. Va.**

Mr. Ralph Lynch, Superintendent, in charge of crushing operations (see picture at left) points with pardonable pride to this smooth running, large capacity Telsmith portable crushing plant. He reported a capacity of 150 to 185 tons per hour making minus 2½-inch material. He says, "this Telsmith portable plant has given us complete satisfaction in operation and production."

***Bulletins 277 and 265 tell you why.***

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P-23-1058

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**504 E. CAPITOL DRIVE** **MILWAUKEE 1, WISCONSIN**

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# Washington News Letter

By S. HERBERT UNTERBERGER

THE opening of a new Congress is always the beginning of a period of uncertainty in Washington, and this year is no exception. The principal question being asked is, "Will the new Congress be as liberal as its membership or as conservative as its leadership?"

Of special importance in considering what the new Congress is likely to do is the fact that the truly powerful members, those who are the chairmen of the important committees, are essentially unchanged. Almost of necessity, because of the seniority rule for assigning committee chairmanships, these chairmen are not only the men with the longest continuous record of service in their respective houses of Congress; most of them are also relatively mature men. It is no surprise, therefore, that they are more conservative than their committee members. Also, because the Southern states are still completely dominated by the Democratic party, many of these long service committee chairmen come from that part of the country.

In the Senate, the chairman of the important committee which deals with taxes continues to be Senator Harry S. Byrd, age 71, a true conservative in the sense that he has a long record of favoring governmental economy. On taxation, his position has consistently been that taxes are revenue measures exclusively, and not devices for such social reform as revising the distribution of income between the rich and the poor.

Nevertheless, Senator Byrd is in favor of a balanced budget. Accordingly, if appropriations continue to remain high, which they are very likely to do, he is not expected to be in favor of tax reduction, which would necessarily result in even greater deficits.

The chairman of the Senate Appropriations Committee is another venerable legislator, Senator Carl Hayden, age 81. Despite his rather advanced age and long tenure, he is generally regarded as a little less conservative than Senator Byrd, but not an extravagant spender. Under his direction, it is unlikely that appropriations will rise above their relatively high level of the previous year, unless there is some very good reason for such action, such as, perhaps, a further intensification of either the cold war—or a hot war.

The principal source of expenditures of federal funds is the military, whose budget accounts for more than half the total federal spending. Serving as chairman of the Senate Armed Services Committee is Senator Richard B. Russell, age 61, of Georgia. He, too, is generally in the conservative camp. He is for a balanced budget and against deficits, except—and the exception is most important—when the safety of the country demands a contrary policy. Unfortunately, for almost two decades, the safety of the country has been in almost continuous jeopardy. As a consequence, Senator Russell has more frequently urged increases in military appropriations than he has supported the opposite policy. So long as we are not yet ready to give up our old methods of defense, and so long as we find it essential to keep up with every new method available, there is almost no way to avoid further expansion in military expenditures.

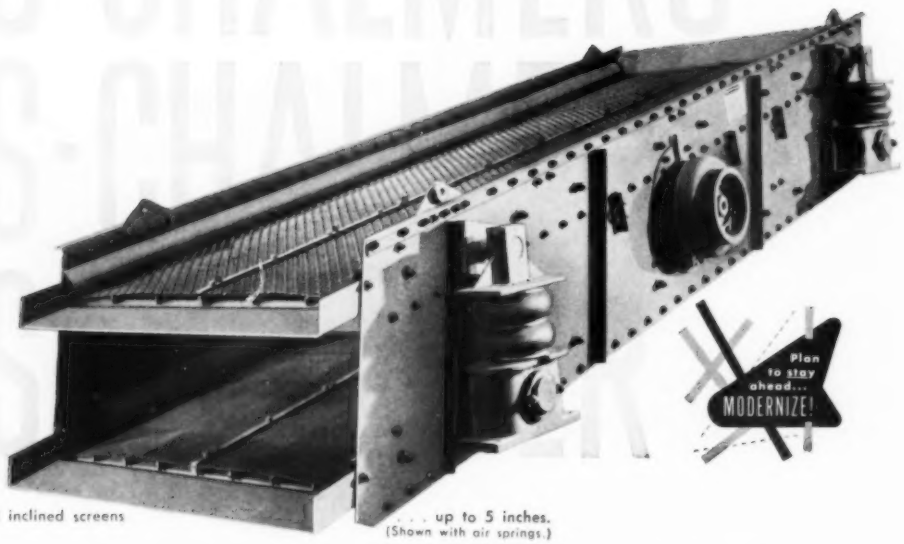
The next most costly item in the Federal Budget, which is subject to some measure of control, is the expenditure for farm aid, particularly crop price supports. What will be done in this area is substantially in the hands of Senator Allen J. Ellender, age 67, of Louisiana, who is chairman of the Senate Agriculture Committee. Senator Ellender is also generally counted in the conservative bloc, except—and again the exception is very significant—when it comes to aid to farmers.

Although Senator Ellender hails from Louisiana, and his particular interest is therefore in supports for the cotton and rice crops, in order to accomplish his ends, he must work closely with other senators, whose particular interests are other crops, such as wheat, corn, or tobacco. Such interests are represented on the committee which he heads; and for this reason, if for no other, the hopes of the budget director, Maurice H. Stans, for significant reductions in these crop support programs are likely to be frustrated.

These committees deal primarily with the matters of income and outgo of federal funds. This is the subject which President Eisenhower has indicated will be his principal interest in the final two years of his administration. From the looks of the people on the Senate side, the President will not encounter too much opposition to his program, provided that it is politically realistic.

On the House side, the chairman counterpart of Senator Byrd is Representative Wilbur D. Mills, age 49, of Arkansas, who will head the committee concerned with revenue or taxes. Unlike Senator Byrd, Representative Mills is more willing to consider taxes a method for accomplishing something beyond providing necessary revenue. For example, he has already indicated his interest in developing tax changes designed to encourage business expansion. A reduction in the high income tax rates

(Continued on page 50)



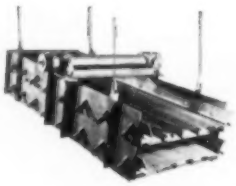

Standard inclined screens . . . up to 5 inches. (Shown with air springs.)

# SCREENS

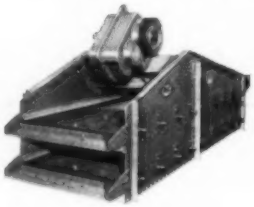
## world's most complete line!

## separations from 12 inches to 325 mesh

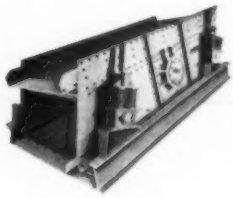
All-metal gyratory screens . . . 2 to 325 mesh.



Small inclined vibrating screens . . . 1½ inches to 40 mesh.



Horizontal vibrating screens . . . up to 2½ inches.



Heavy duty scalping screens . . . . up to 12 inches.

**Expert application help.** Allis-Chalmers not only offers the most complete line of dependable, high-production screens, but also provides expert counsel based on unequaled experience in screen applications. In addition, modern pilot plant facilities are available for test runs of difficult or untried materials, if necessary.

For your copy of valuable screen selection guide, 25C6177M, write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

Suspended or floor mounted, or supported on air springs.

Inclined or horizontal.

Wet or dry operation.

Screens for hot materials handling.

Dustproof enclosures.

Electrical and mechanical anti-blinding devices.

Screens designed for special applications.

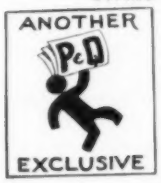
And you get your screen complete with motor, drive and control — all built by Allis-Chalmers.

**ALLIS-CHALMERS**

A-5819

# Labor Developments

## Strike Timetable




NOW that the economic recession appears to be practically ended, business and labor union officials who have lived through many a previous economic cycle are preparing for the usual post-recession rash of strikes.

While labor agreements were finally completed by the principal automobile manufacturers without substantial company-wide shutdowns, mopping up after those initial agreements has, nevertheless, engendered a substantial number of local shutdowns, many of which have been very difficult to end.

In addition, strikes against suppliers of key automobile parts have become almost epidemic. The end result is that the large automobile companies have not obtained all that they had expected from the completion of their labor negotiations. They tried to get the difficulties cleared away so that they could put the new models on the market as rapidly as possible. In this, they have been frustrated because of this large number of related labor disputes.

The fact that it has become harder to settle a labor dispute with a relatively small supplier of automobile parts than with the giant automobile manufacturers, for the most part, is only a reflection of the changed economic situation. With the return of relative prosperity, the unions are just less willing to accept what they regard as an inadequate settlement. It is principally for this reason that a relatively large number of strikes is now expected in 1959.

However, the earliest of these expectations — labor difficulties in the coal industry—did not materialize. During World War II and for some years thereafter, John L. Lewis, president of the United Mine Workers of America, was the *bete noire* of American industry. His willingness and ability to call a strike in the important fuel-producing industry, even in the face of tremendous public opposition, made him the most feared and hated man in all of the labor movement. However, for approximately eight years now, there have been no stoppages in the coal mines. Very recently another labor agreement was entered into without fanfare, flurry, or threat, providing a substantial wage increase for bituminous coal miners.

**By S. HERBERT UNTERBERGER**

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

There is still a possibility of a strike in the anthracite coal industry. However, in view of the economics of that industry and the difficulties which have beset it and which are likely to continue, realistic John L. Lewis may be very willing to take the best bargain he can get without forcing the issue beyond what the employers can tolerate.

If the hard coal situation should be settled without any substantial difficulty, the next problem most likely to develop will occur in April. At that time the contracts between the major rubber companies and the United Rubber Workers of America expire. How strong the union bargaining position will be will depend, in great part, on whether the automobile industry achieves the kind of banner year for which it is hoping. If it does, the demand for tires and tubes will be at a new high level, and the union will, no doubt, press not only for improved wages but also for fringe benefits which are not even near the head of the procession.

During the same month, the Textile Workers Union will be attempting to sign new contracts with a number of large textile manufacturing concerns. This union, which has not been very successful in organizing large segments of its industry, particularly those located in the Southeastern part of the United States, will again try to deliver some significant improvement to its members.

Because of Southern competition and because the textile industry in general has been depressed, this union on several occasions in the past has foregone wage increases in the interest of keeping a larger number of its members employed. The textile industry appears to be enjoying the kind of prosperity which it has not known for many years. Accordingly, this union may regard 1959 as its best chance for obtaining wage and other improvements. If it takes this position, strikes in this industry may be inevitable.

In addition to these problems, another industry which has generally been characterized by labor peace will be required to work out a new labor agreement. This is the women's clothing industry which has been organized, almost from time immemorial, by the International Ladies Garment Workers Union.

It will be remembered that the last contract negotiation in some segments of the industry broke a record labor peace of almost two decades by a strike which affected not only the New York market but also many areas outside of New York. In some of these, particularly in northeastern Pennsylvania, the issue has not yet been settled.

The potential labor difficulty

(Continued on page 50)

# SECO "Follow Through"

**ANOTHER WAY OF SAYING WE SHIP STANDARD PARTS THE SAME DAY THE ORDER IS RECEIVED**

**OPERATION**
**SCREENING**
**EFFICIENCY**

Here's still another example of our continuing recognition of responsibility to SECO screen owners. Another example of our lasting interest in your SECO screen, long after it has left the factory.

We maintain at all times a complete stock of all SECO standard parts, fabricated and machined to strictest specifications.

If you ever do need a standard replacement part for any SECO screen, we'll ship it fastest means available the same day we receive your order.

**Operation "Screening Efficiency"**

We know that downtime can be mighty costly to you . . . that's why we build SECO screens right in the first place to minimize parts replacement needs and why we follow through with swift delivery if the need arises. Another reason you're better off with SECO screens.

**SCREEN EQUIPMENT COMPANY, INC.**
**BUFFALO 25, NEW YORK**

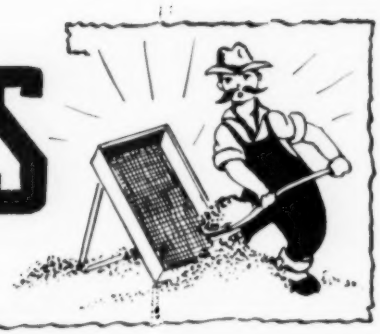
## SECO NO. 1 NEARS QUARTER CENTURY OF SERVICE

Way back in the mid-thirties, the first SECO screen went into service at Cortland, New York. Today, this tried and true workhorse is still on the job giving stouthearted service without a whimper.

**Send for SECO 4-Bearing Catalog 204 or Twin Bearing Booklet TB-21.**

**SECO**
**TRUE CIRCULAR ACTION**
**VIBRATING SCREENS**

# SCREENINGS



## By RAY L. SMITH JR.

WHO FIRST said: "Of the people, by the people, for the people"?

The first 99 persons out of 100 will reply, "Lincoln," and the 100th person will add, "in his Gettysburg Address."

The famous phrase, familiar to millions of school children and their elders, actually is 573 years old, and once appeared in the Bible!

In John Wycliffe's introduction to his translation of the Bible, published in England in 1382, these words occur: "The Bible is for the government of the people, by the people, and for the people."

### *Macht Nichts Aus*

A RECENT ISSUE of *The Warner News,* a publication which is published in the interest of Warner Company employees contains the following:

Humorous "Dutch" Definitions of Familiar Things in Warner Company

JACKHAMMER—Holengrounder mit Manschaken
CHURN DRILL—Holengrounder mit Uppendowner Klanckenbang
ROTARY DRILL—Holengrounder mit Growlen und Dust aus Geshooten
PRIMARY BLAST—Laudenboomer
POWER SHOVEL—Bustenrock Pickenupper mitout Backbreaken
GYRATORY CRUSHER—Rockenkruncher mit Wobbleschmascher
JAW CRUSHER—Rockenkruncher mit Flappenschmascher
PORTABLE CRUSHING PLANT—Rockenkruncher mit Gitupundgo
PLANT SUPERINTENDENT—Werkesfuehrer mit Laudenvoice und Hairgepullen
GENERAL SUPERINTENDENT—Grosse Werkesfuehrer mit Whipschnappen and Hairkaput
PURCHASING DEPARTMENT—Grossermarkgeschpender
EMPLOYEE RELATIONS DEPT.—Hartzundflowerz singen mit Tierzflowen

### The Rhythm of the Road

"THE MOST novel suggestion we've heard yet for the new highway program comes from the real estate editor of the Louisville Courier Journal, Gray Clay," reports the F. W. Dodge Corporation's Building Business Bulletin "why, he wants to know, must we listen to the monotonous whump whump whump of the highway joints? Why not vary the distance between the joints to change the rhythm? A mile or two of Samba, for instance, followed by a stretch of Cha Cha, and perhaps (on the down grades) a little be-bop." (Now, wait a minute! We didn't say we endorsed the idea. We just said it was novel.)

### Potpourri and Succotash

The following appeared in the personal columns of a London newspaper:

"My husband and I have four sons. Has anyone any suggestions as to how we may have a daughter?"

Letters from all over the world poured in. An American reminded the woman of the adage, if at first you don't succeed, try, try again.

A Canadian suggested checking with the Dionnes.

A South African doctor suggested a special diet.

An Indian suggested yogi.

But a Frenchman merely wrote: "Can I be of any service?"

"Where'd you get that black eye?"
"I was out with Bill's old girl."
"Yeah, but how come the black eye?"
"Bill was a liar!"

A man wrote to the Credit Bureau of Salem, Mass.: "Sorry this bill has remained unpaid for so long. I've been married and have been on my honeymoon. As soon as I get on my feet, I'll be in to make a payment."

The maid was ill so her mistress sent for the doctor, who upon arriving asked the mistress to leave the room so he could make his examination.

When the maid was alone with the physician she confessed: "Doctor, I'm not really ill. She owes me for six weeks' salary and I'm not getting out of bed until she pays me."

"She owes me for the last ten visits I made here," the doctor said. "Move over."

A small boy, visiting New York City for the first time, went in an elevator to the top of the Empire State Building. As he shot past the 62nd floor at breathtaking speed, he gulped, turned to his father and asked, "Daddy, does God know we're coming?"

A three year old was struggling with the back button of his long underwear. Finally he gave up, trotted to his mother and said: "Mommy, open my bath-room door, please."

"I went to a nudist party for the week end. They don't do things by halves. Even the butler who opened the door for me was completely nude."

"How did you know it was the butler?"

"Well, it certainly wasn't the maid."

"You'll drive me out of my mind," said the golfer.

"That would be a putt, dear, hardly a drive," replied his wife.

**NEW DW20**
Series G

**NEW No. 456**
Series B

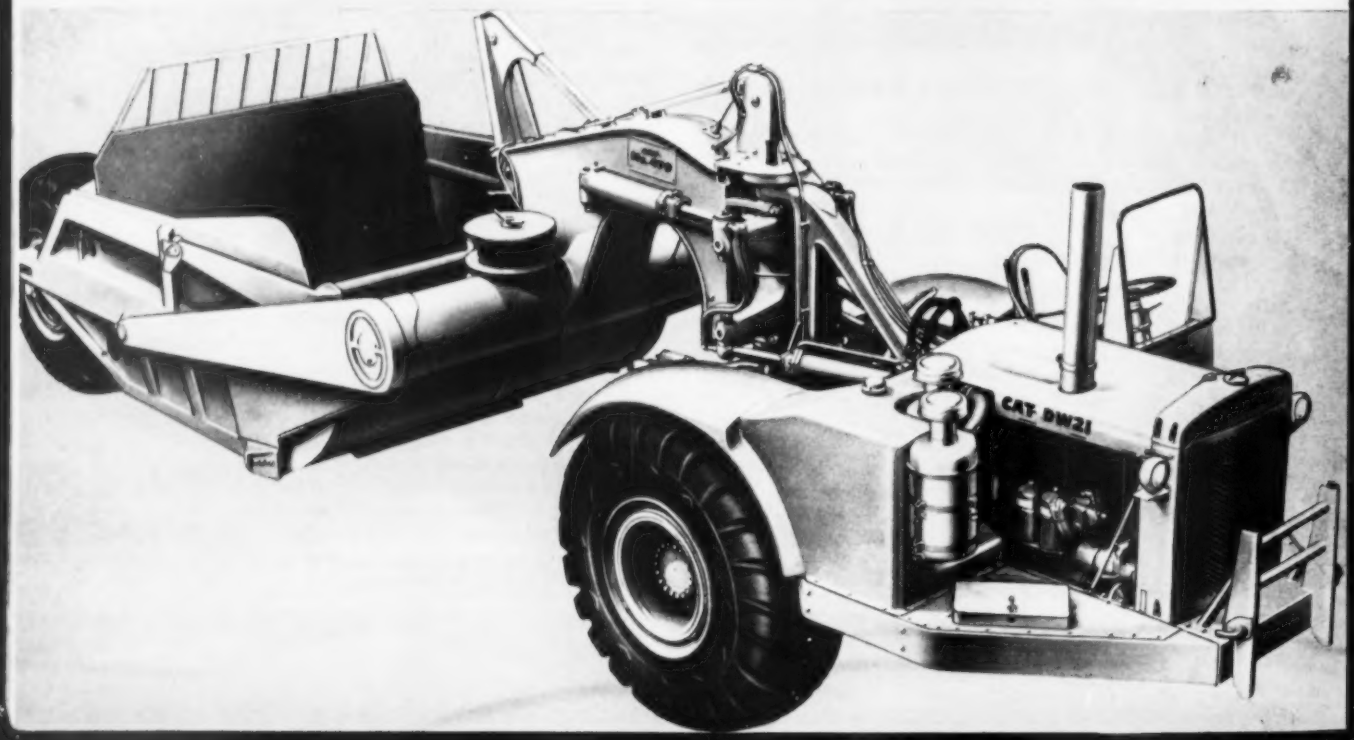
**NEW HP** —345 (maximum output)—increased 8%
**NEW RIMPULL** —39,565 lb. (maximum)—increased 12%
**NEW SPEEDS** —increased rimpull—provides up to 20% faster travel speeds under normal haul road conditions
**NEW CAPACITY**—19.5 cu. yd. (struck)—increased 8%
27 cu. yd. (heaped)—increased 8%

---

**NEW DW21**
Series G

**NEW No. 470**
Series B

**NEW HP** —345 (maximum output)—increased 8%
**NEW RIMPULL** —49,100 lb. (maximum)—increased 12%
**NEW SPEEDS** —increased rimpull—provides up to 20% faster travel speeds under normal haul road conditions
**NEW CAPACITY**—19.5 cu. yd. (struck)—increased 8%
27 cu. yd. (heaped)—increased 8%



CATERPILLAR'S PROJECT PAYDIRT

**PROJECT PAYDIRT*** *pays off for you*

# NEW CAT DW20 and DW21 SERIES G TRACTORS NOW 345 HP

*—plus new high-capacity LOWBOWL Scrapers for faster cycles and higher production!*

For down-to-earth facts about these big new Caterpillar rigs, take a look at the box scores shown here. They summarize important increases in horsepower, rimpull, speeds, scraper ratings and tire capacities that pay off for you *on the job* with faster cycles, greater production and more profit!

Note that the increased HP of the DW20 and DW21 Series G, compared with the models they're replacing, gives 12% higher rimpull. This increased rimpull provides up to 20% faster travel speeds under similar haul road conditions. Equally important, this horsepower increase was achieved without any sacrifice whatsoever in the excellent torque characteristics inherent in the Cat Super-Turbo Engine. Torque rise of the engine in the Series G models is unequaled in the earthmoving industry.

In addition to the advantages featured in the box scores, the new Series G Tractors and their matching LOWBOWL Scrapers deliver the *proved* reliability of Caterpillar-built machines. To handle increased horsepower and increased capacity, both have been improved in design and structure. The tractors, for example, have stronger final drive gears and improved transmission shifter forks. The scrapers have stronger bowls, push frames, draft frames and aprons. All these and other improvements result in better service life, less maintenance and lower cost dirt.

Here are modern, heavy-duty wheel rigs geared to the needs of today's highly competitive market—rigs that meet your requirements for moving more dirt at lower cost than ever. Get the complete facts about them from your Caterpillar Dealer. Call him today and set a date for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

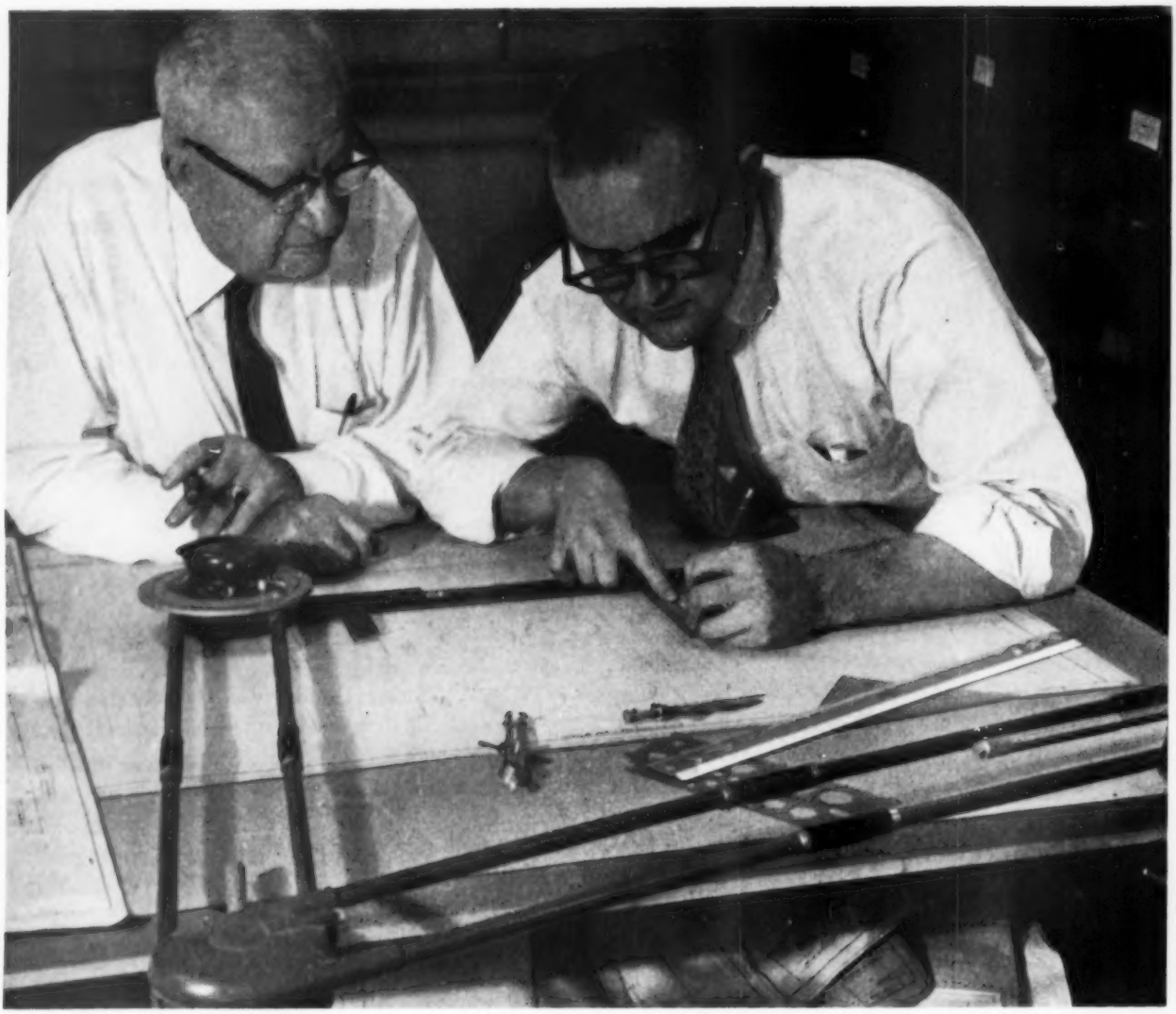
BORN OF RESEARCH
PROVED IN THE FIELD

**TIRES:** 29.5-29 (28-ply rating) are now standard in place of the former 29.5-29 (22-ply rating)—a tire capacity increase of 16% to match the increased scraper capacity, heavier machine weight and higher speeds made possible by more HP. Note: On the DW20 Series G, the front tires remain the same—14.00-24 (16-ply rating).

CATERPILLAR'S PROJECT PAYDIRT

***PROJECT PAYDIRT:** Caterpillar's multi-million-dollar research and development program—to meet the challenge of the greatest construction era in history with the highest production earthmoving machines ever developed.

*Enter 16 on card, page 165*



**DESIGNS** of more efficient machines–or of a complete pack house from bins to loading dock–are continually being developed by St. Regis engineers.

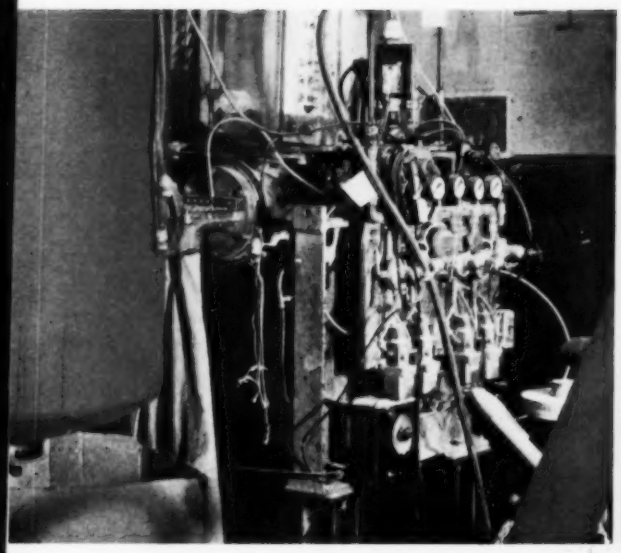
# MEN AT WORK: PLANNING

**L.C.P.T.**–lower cost per ton (or per barrel)–means economical multiwall packaging of cement. It is brought about by a combination of research, bag design, packaging equipment and materials handling methods – all working together.

St. Regis maintains the widest range of research, engineering, development and testing facilities in the Industry. That is why St. Regis bags and equipment produce L.C.P.T. packaging today. That is the reason why St. Regis is able, also, to make continuous efforts toward producing cleaner bags, closer control of weights and even more efficient packaging methods.

**At Providence,** machines are designed, developed, built in prototype. They are shop tested, put on the job in the field. Then–and only after this exhaustive testing –they are manufactured for the cement industry.

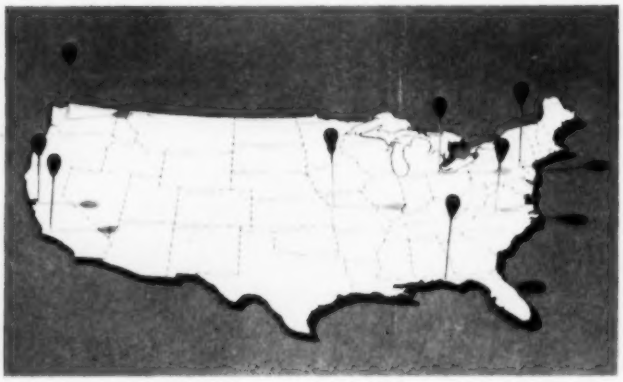
**In Pensacola,** specialized experience and equipment, backed by extensive research facilities, result in better bags for the cement industry. Latest and most efficient



**FLOW** of solids is a new area for research that has been pioneered by St. Regis to help cement packers achieve lower cost per ton (or barrel) output.

**PRODUCTION** facilities at Providence where better machines are built. Seen under construction are 150FC packers (foreground)—latest in the cement field.

**BAG DESIGNS** that *sell* are a specialty of the St. Regis Pensacola facilities. A portion of the design department is shown here.



**DELIVERY** to meet your needs is assured by the strategic location of the eight St. Regis multiwall bag plants. Prompt service helps you to keep inventories at economic levels.

# L.C.P.T. PACKAGING FOR YOU!

cement bag is the super stepped-end multiwall bag.

**In the field,** St. Regis Sales Engineers bring unrivalled knowledge of both packaging and the cement business to bear on the specifics of each problem. Conveniently-located plants assure you of bag supply at all times.

Whether you need a single machine or a complete pack house, St. Regis can supply or design and produce the equipment you require.

**In Multiwall Packaging, St. Regis Means Lower Cost Per Ton**

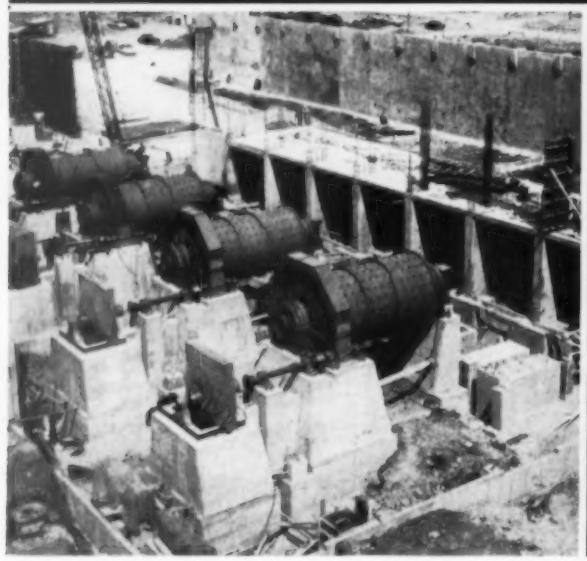
MULTIWALL PACKAGING DIVISION

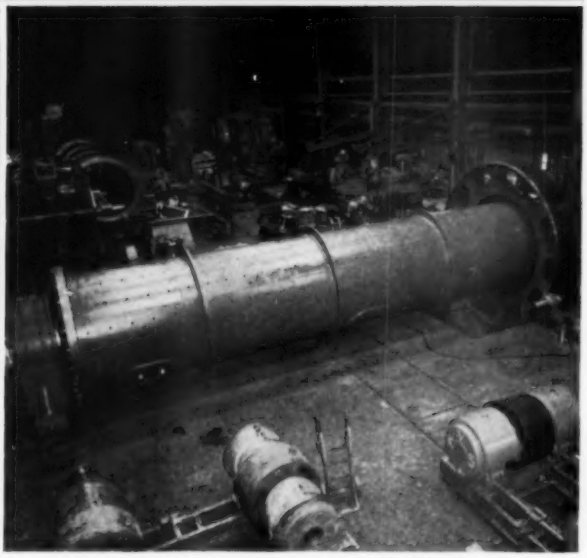
**St. Regis PAPER COMPANY**

150 EAST 42ND STREET, NEW YORK 17, N.Y.

# KENNEDY

## GRINDING MILLS for the CEMENT INDUSTRY





The qualities which distinguish KENNEDY Mills are high capacity, dependable performance, low operating cost and minimum maintenance. KENNEDY Mills are in use all over the world, grinding cement raw materials and clinker and pulverizing coal for firing rotary kilns.

KENNEDY MILLS are available in all types and sizes ranging from long, multi-compartment mills to shorter, large diameter mills for closed circuit grinding as mechanical discharge type or air-swept.

KENNEDY MILLS are available with a choice of drives:—the renowned KENNEDY enclosed integral gear drive; with ring gear and pinion drive, either spur or helical; or with separate reducer drive.

KENNEDY MILLS used as a part of the patented KENNEDY Air-Swept Grinding System simultaneously grind and dry raw materials or coal, in closed circuit with non-mechanical air separators for kiln feed or kiln firing.

All KENNEDY MILLS are built in our own completely equipped plant. Shell flanges are machined simultaneously on special mammoth lathes for perfect alignment.

*Ask a* KENNEDY *engineer to show you the economies possible with a* KENNEDY *Mill.*

**KENNEDY VAN SAUN**

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

Primary & Secondary Gyratory Crushers • Jaw Crushers • Roll Crushers • Impact Breakers • Hammer Mills • Kilns • Dryers • Screens • Mechanical & Pneumatic Conveyors • Complete Crushing, Lime & Cement Plant. KENNEDY Research and Testing Service

# Rubber arteries serve the heart of this aggregate plant

Acme-Hamilton conveyor belting, nearly a mile of it on 16 Barber-Greene conveyors, carries aggregate from the pit to this washing, crushing and screening plant, stockpiles the different products, then loads them on barges. 4 men operate the entire plant! Impossible without dependable, trouble-free conveyors and Acme-Hamilton belting.

**Cushion Covers,** reinforced edges defy pounding impacts, cuts, abrasion and edge wear.

**Breaker Fabric.** Optional double cord fabric acts as second cushion, increases cover adhesion.

**Fabric Plies.** Impregnated with rubber add strength.

**Rubber Skim Coat.** Provides a resilient bed between plies.

Write Acme-Hamilton, Dept. Q2.

**Acme Hamilton**

Serving Industry Since 1870

**MANUFACTURING CORPORATION, TRENTON 3, N. J.**

*Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.*

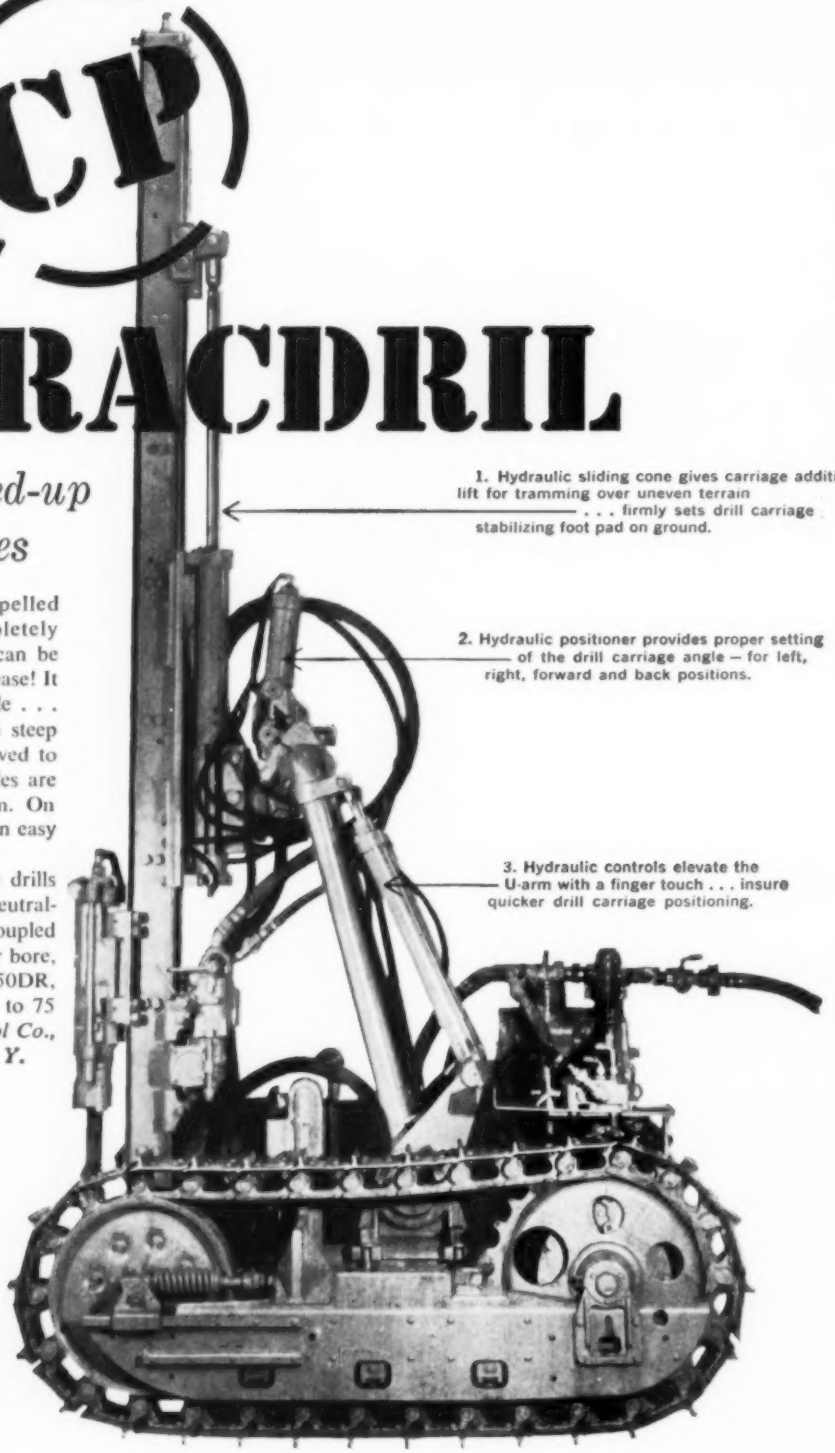
ATLANTA • CHICAGO • HOUSTON • PITTSBURGH • INDIANAPOLIS • LOS ANGELES • NEW YORK • SAN FRANCISCO

# TRACDRIL

## *has 3 speed-up features*

This new G-800 self-propelled Tracdril provides a completely mobile drill mounting . . . can be "spotted" into position with ease! It takes uneven ground in stride . . . tows its own compressor up steep grades. With feed motor moved to rear of drill carriage, toe-holes are started only 9" from bottom. On top-holes, drill controls stay in easy reach.

Two heavy-duty deep-hole drills now available with standard-neutral-reverse rotation for use with coupled steel: CP-400DR, 4" cylinder bore, 2½" holes to 50 feet; and CP-450DR, 4½" cylinder bore, 3" holes to 75 feet. *Chicago Pneumatic Tool Co., 8 East 44th St., N. Y. 17, N. Y.*


1. Hydraulic sliding cone gives carriage additional lift for tramming over uneven terrain . . . firmly sets drill carriage stabilizing foot pad on ground.
2. Hydraulic positioner provides proper setting of the drill carriage angle — for left, right, forward and back positions.
3. Hydraulic controls elevate the U-arm with a finger touch . . . insure quicker drill carriage positioning.

Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

# News of the Industry

## National Gypsum Company Seeks Exchange of Stock To Acquire Huron Portland

Plans have been announced at Buffalo, N. Y., by National Gypsum Company executives for the acquisition of the Huron Portland Cement Company of Detroit, Mich. The transaction would involve approximately $60,000,000, and would be the largest acquisition in National's 33-year history.

Approval of the stockholders of both companies will implement the plans, which provide for an exchange of 1,449,000 shares of Huron stock for 1,014,300 shares of National Gypsum. This trade would amount to 1 share of Huron to 0.7 share of National.

Huron, founded in 1907, operates a cement plant at Alpena, Mich., which is described as the world's largest. The company also maintains 12 distributing plants in the Great Lakes area.

National Gypsum produces 250 items in its 40 plants in the United States and Canada. In addition, the firm holds extensive mineral deposits. Last August it acquired the American Encaustic Tiling Company, Lansdale, Pa., and a few weeks ago the Olean Tile Company, Olean, N. Y. Shareholders of National Gypsum number about 30,000.

## Arkansas Cement Co. Plant At Foreman in Operation

The newly-completed plant of Arkansas Cement Corporation (a subsidiary of Arkansas Louisiana Gas Company) located near Foreman, Ark., was recently placed in operation. Carloads of "Foreman" brand cement started rolling out of the multimillion-dollar plant in mid-December.

W. R. Stephens, president and board chairman of the Arkansas Louisiana Gas Co., stated that the initial orders went in bulk by rail to various parts of the plant's four-state primary trade area. This section covers Arkansas, north Louisiana, east Texas, and east Oklahoma.

Geared to a capacity of 1,300,000 bbl. annually, the new facility will produce all the regular types of portland cement, as well as masonry cement. Construction of the plant required over one year.

Large quantities of natural gas will be used in firing the 450-ft. rotary cement clinker-making kiln, and in producing electricity. The site of the plant is in the center of extensive deposits of limestone which geologists estimate to be adequate for a 200-year supply.

## Elliott Appointed to Post Of President-Gen. Manager By Lake Ontario Portland

The board of directors of Lake Ontario Portland Cement Company, Picton, Ont., announce the appointment of George H. Elliott as president, general manager, and director.

Mr. Elliott is also president of Rochester Portland Cement Corporation of Rochester, N. Y., a subsidiary of Lake Ontario Portland Cement Company. Prior to his new appointment, he was vice-president of the Gustin-Bacon Mfg. Co.

## Coming Events

January 19-21, 1959—Washington, D.C. 14th Annual Convention, National Agricultural Limestone Institute. Hotel Statler.

January 19-22, 1959 — Dallas, Tex. 57th annual convention and 5th materials and services exhibit, American Road Builders' Association. Dallas Memorial Auditorium.

January 21-22, 1959—Washington, D.C. 4th annual convention, National Crushed Limestone Institute. Hotel Statler.

January 25-29, 1959 — Chicago, Ill. 40th annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

January 27-30, 1959 — Miami Beach. 42nd annual convention, National Crushed Stone Association. Americana Hotel.

February 2-6, 1959 — Miami Beach, Fla. Convention, National Bituminous Concrete Association. Americana Hotel.

February 2-6, 1959,—Pittsburgh, Pa. Committee meeting, American Society for Testing Materials. William Penn Hotel.

February 15-19, 1959—San Francisco. Annual meeting, American Institute of Mining, Metallurgical, and Petroleum Engineers.

February 16-19, 1959—New Orleans. 43rd annual convention, National Sand and Gravel Association; 29th annual convention, National Ready Mixed Concrete Association. Roosevelt Hotel.

February 23-27, 1959 — Los Angeles. 55th annual convention, American Concrete Institute. Statler-Hilton Hotel.

April 6-8, 1959 — Hot Springs, Va. 51st annual convention, National Lime Association. The Homestead.

## October Building Contracts Set New High Record— 6-Mo. Total Highest Ever

Sparked by large increases in housing and heavy engineering, construction contracts in October rose to a new record for the month, 27 percent ahead of October, 1957, according to F. W. Dodge Corporation.

Dr. George Cline Smith, Dodge vice-president and economist, reported that October was the sixth successive month in which contracts have set new monthly records, and that the May-October period was by far the highest such period in history.

October contracts in the United States totalled $3,309,024,000, and Dr. Smith stated that it was the first time any October had passed the $3,000,000,000-mark.

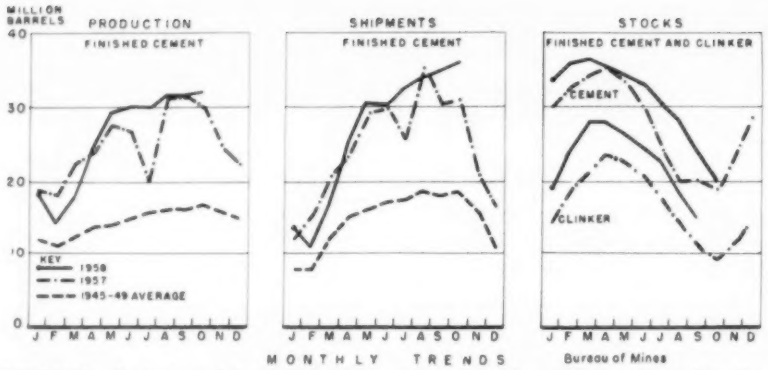
The biggest increase over last year, in dollar terms, occurred in residential contracts. These totalled $1,595,041,000 in October, up $430,000,000, or 37 percent, above October, 1957. Most of this dollar increase occurred in single-family homes, although the percentage increase in apartment building contracts was much greater.

Dwelling units put under contract in October totalled 123,553, up 38 percent from a year ago. Here, again, Dr. Smith reported, single-family homes accounted for the bulk of the increase, but apartment units increased much more sharply in percentage terms.

The greatest percentage increase among the three major categories of construction, according to the Dodge data, occurred in heavy engineering. The October total for this group was $759,190,000, up 41 percent from last year. As in other recent months, Dr. Smith reported, highways and electric power projects produced most of the increase.

Contracts for non-residential building in October, were $954,-793,000, up 5 percent from October, 1957. The principal increases occurred in commercial buildings, public buildings, churches, and social and recreational buildings; these were partially offset by declines in other groups, with the sharpest decrease in manufacturing buildings.

Cumulative totals for the first ten months of 1958, with percentage changes from the corresponding period of 1957, are as follows: Non-residential building, $9,452,320,-000, down 3 percent; residential building, $12,534,797,000, up 10 percent; heavy engineering, $8,292,-729,000, up 23 percent; total construction, $30,279,846,000, up 9 percent.




SUMMARY—Production of finished portland cement in October, 1958, as reported to the U. S. Bureau of Mines, totaled 32,847,000 bbl., an increase of 9 percent over October, 1957. Mill shipments in October, 1958, totaled 36,615,000 bbl., an increase of 19 percent compared with October, 1957. Stocks of 20,412,000 bbl. of finished portland cement on hand October 31, 1958, were 6 percent more than those on hand October 31, 1957. Clinker production during October, 1958, totaled 29,905,000 bbl., an increase of 4 percent over the October, 1957, production.

PRODUCTION—One hundred and sixty-four (164) plants in 37 states and Puerto Rico reported a production of 32,847,000 bbl. of finished portland cement in October, 1958, compared with 30,121,000 bbl. in October, 1957.

Production of clinker during the month of October, 1958, was 29,905,000 bbl. compared with 28,758,000 bbl. produced in October, 1957.

High-early-strength portland cement production in October, 1958, totaled 1,025,000 bbl., a decrease of 3 percent compared with October, 1957.

Prepared masonry cement production in October, 1958, totaled 1,323,000 bbl., an increase of 17 percent over the October, 1957, figure.

SHIPMENTS—Mill shipments of finished portland cement for October, 1958, totaled 36,-615,000 bbl. compared with 30,847,000 bbl. in October, 1957.

In October, 1958, shipments were higher in 20 districts and lower in 3 districts than in October, 1957. The largest increases were in the Oregon-Washington, Kansas, eastern Missouri-Minnesota-South Dakota, and Georgia-Florida districts. The greatest decrease was in Puerto Rico.

Mill shipments of high-early-strength portland cement increased from 1,181,000 bbl. in October, 1957, to 1,280,000 bbl. in October, 1958.

Mill shipments of prepared masonry cement in October, 1958, totaled 1,565,000 bbl., compared with 1,244,000 bbl. in October, 1957. As usual, over one-half of the shipments were from plants in the northern states east of the Mississippi River. Prepared masonry cements are shown in 376-lb. barrels, although they are sold in barrels of varying weights.

STOCKS—Mill stocks of finished portland cement on hand October 31, 1958, totaled 20,-412,000 bbl., an increase of 6 percent over the 19,213,000 bbl. on hand October 31, 1957. Stocks of clinker increased 30 percent from 9,444,000 bbl. on hand October 31, 1957, to 12,278,000 bbl. on hand October 31, 1958.

FIRST TEN MONTHS—For the January-October period this year, the volume of production of finished cement amounted to 259,698,000 bbl., compared with 250,401,000 bbl. in the same period of 1957. Total shipments for the first ten months of 1958 are reported as 265,-889,000 bbl.; in 1957 (January-October period) the total shipments were 251,447,000 bbl.

### Limestone-Carrying Vessel Sinks in Lake Michigan Storm

In one of the most violent lake storms in recent years, the Great Lakes cargo carrier *Carl D. Bradley*, a 639-ft. long vessel with a crew of 35 sank on November 18, near Gull Island. The vessel had left the Gary steel docks for Traverse City, Mich., after delivering a load of limestone for the steel mills.

The *Bradley*, one of the nine ships in the limestone-carrying fleet of the Michigan Limestone Division, United States Steel Corporation, had a capacity of 17,000 tons and normally carried a cargo of 12,000 tons. It was owned by the Bradley Transportation Company of Rogers City, Mich.

Only two crewmen survived the disaster. They were rescued by the U. S. Coast Guard, after being spotted by a helicopter.

Although the exact cause of the breakup and sinking was not immediately established, it was indicated that the tragedy was due to the vessel's unusual length and also to the fact that she was riding high in the water with a hold that was practically empty.

# EAGLE Washing Equipment AGAIN chosen by Michigan producer

Back in 1952 Cheney Gravel Co., Holt, Mich., near Lansing, installed Eagle Sand Washing, Classifying and Dehydrating Equipment and an Eagle "Swintek" Dredging Ladder, all of which has given highly satisfactory performance.

F. G. Cheney recently opened up an additional operation nearby, known as Sky-Way Sand & Gravel Co. Eagle Equipment was *first choice* for this plant, based on past experience. The modern Eagle plant section pictured above has been installed and is likewise giving splendid service. A 36″ x 24′ Eagle Log Washer is processing coarse material, eliminating clay and soft stone sufficiently for the material in this deposit to meet specifications. Sky-Way also installed a 10″ - 60′ light duty "Swintek" unit on their dredge so as to operate at highest efficiency.

Again and again purchasers of Eagle Equipment come back for more . . . proving that Eagle Equipment makes money for them, gives them service and satisfaction. Send for Catalog 58 on Eagle Washing Equipment . . . . Catalog 83 on Eagle "Swintek" Dredging Ladders.

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**ENGINEERS • MANUFACTURERS**
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**THERE'S A FACTORY-TRAINED EAGLE LINE DISTRIBUTOR NEAR YOU TO SERVE YOU.**

● De Wees-Weber Stone Company, Anamosa, Iowa, producers of building and landscape stone, pry out and move rock, load trucks and feed the crusher with this Michigan Tractor Shovel which is equipped with a fork-lift attachment. The stone company loads about 20,000 tons a year. This piece of equipment has moved rocks weighing almost six tons.

## Huron Portland Cement Co. To Build Distributing Plant At St. Joseph, Mich. Site

Approval for the completion of a new cement distributing plant at St. Joseph, Mich., has been granted by the board of directors of the Huron Portland Cement Company. The new facility, located on the St. Joseph River, will be the cement company's 13th distributing plant.

The new plant, located on a 5-acre-site, will have ten silos with a combined storage capacity of 150,000 bbl. Bulk and package loading facilities for trucks and railroad cars will be located directly beneath the silos. Like the other Huron plants located throughout the Great Lakes, the new St. Joseph plant will be supplied with cement from the company's mill at Alpena, Mich., by Huron's own fleet of six self-unloading ships. Completion of the plant is scheduled for 1959.

### Production Dept. Changes Announced by Ideal Cement

Three appointments in the Production Department of Ideal Cement Company, Denver, Colo., have been announced by Cris Dobbins, president.

A. W. HOOTON, formerly Rocky Mountain regional production manager, has been transferred to Pacific regional production manager, succeeding E. F. Bollinger, who recently resigned.

HORACE STRAIGHT, former plant manager at Portland, has been promoted to Rocky Mountain regional production manager.

WARREN E. BROWN has been transferred from the San Juan plant, where he was plant manager, to the Portland plant, where he will have the same position.


A COMPLETE NEW LINE OF STANDARD

FOR QUARRYING, MINING AND CONSTRUCTION

An all-new, complete line of standard hydraulic, side-dumping, drop-door trailers in capacities of 20, 30 and 40 tons. EASTON's rugged, modern design uses body plates of high-strength alloy steel, with a floor plate of special heat-treated alloy steel.

B-1082

## Upward Trend Continues In Aug., Sept. Lime Sales

Domestic sales of open-market lime in August, 1958, (649,895 short tons) increased, compared to the July output, according to reports made by producers to the U. S. Bureau of Mines. Increases were noted in all major categories.

Another increase was noted in September, when the total was reported at 687,421 short tons. Agricultural, refractory, chemical, and other industrial lime increased in September, but a slight decrease was noted in construction lime. (See table.)

**Lime Sold by Producers[1] in the United States, in Specified Periods of 1957-58, by Types and Major Uses in Short Tons**

| | August | September | | January-September | |
|---|---|---|---|---|---|
| | 1958 | 1958 | 1957 | 1958 | 1957 |
| By types: | | | | | |
| Quicklime | 478,978 | 516,397 | 587,036 | 4,135,497 | 5,462,606 |
| Hydrated lime | 170,917 | 171,024 | 168,507 | 1,416,068 | 1,425,225 |
| Total[2] | 649,895 | 687,421 | 755,543 | 5,551,565 | 6,887,825 |
| By uses | | | | | |
| Agricultural: | | | | | |
| Quicklime | 5,783 | 7,958 | 12,073 | 41,427 | 58,323 |
| Hydrated lime | 7,593 | 10,051 | 10,140 | 97,967 | 115,717 |
| Total | 13,376 | 18,009 | 22,213 | 139,394 | 174,040 |
| Construction: | | | | | |
| Quicklime | 11,616 | 12,297 | 10,562 | 99,208 | 138,422 |
| Hydrated lime | 87,826 | 85,640 | 78,067 | 689,812 | 690,237 |
| Total | 99,442 | 97,937 | 88,629 | 789,020 | 828,659 |
| Chemical and other industrial: | | | | | |
| Quicklime | 323,628 | 349,262 | 388,344 | 2,858,852 | 3,472,691 |
| Hydrated lime | 75,498 | 75,333 | 80,300 | 628,289 | 619,271 |
| Total | 399,126 | 424,595 | 468,644 | 3,487,141 | 4,091,962 |
| Refractory (dead-burned dolomite) | 137,951 | 146,880 | 176,057 | 1,136,010 | 1,793,164 |

[1]Also includes a small quantity of captive tonnage. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.

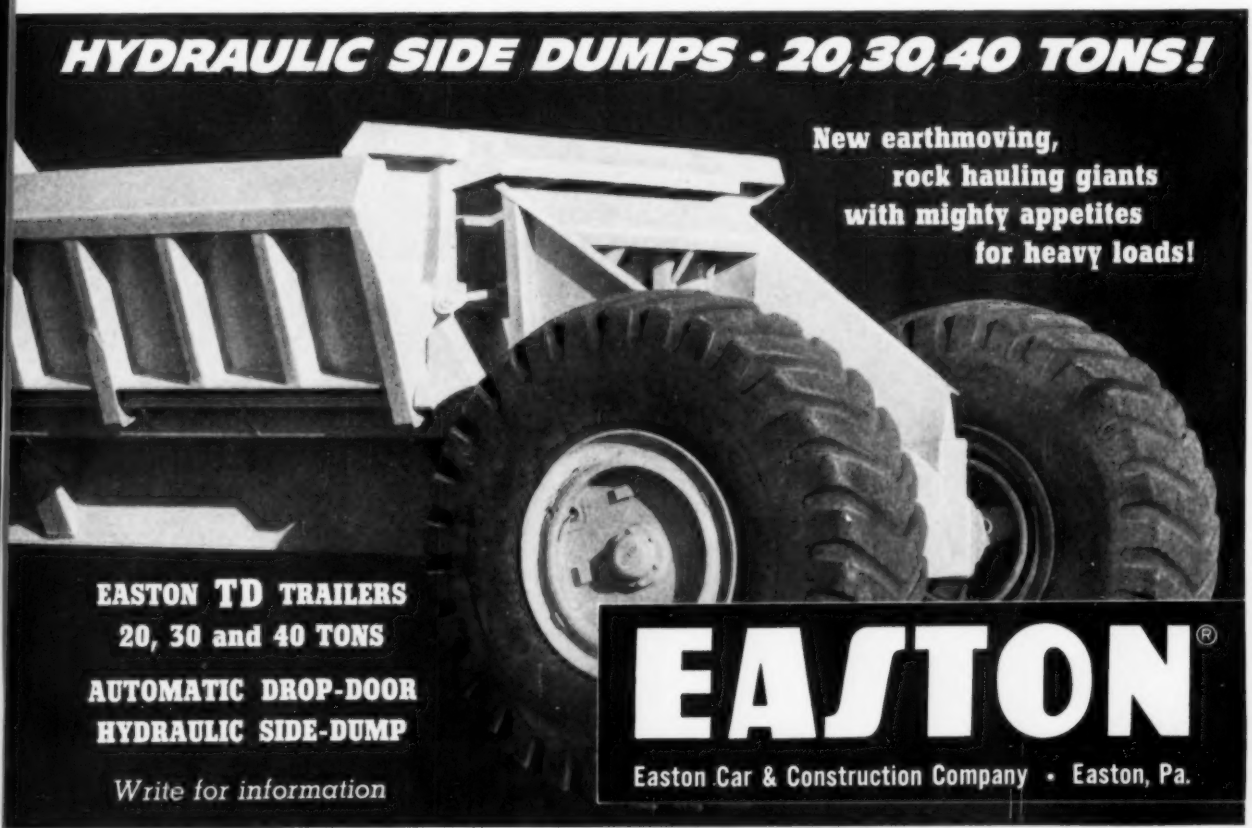
[2]Approximately 60 percent of lime produced is high-calcium and 40 percent high-magnesium.

## Labor Hiring Arrangements Must Now Meet Conditions Of Brown-Olds Decision

According to a recent announcement issued by the office of the the general counsel, National Labor Relations Board, the moratorium of several months' duration on full application of the Brown-Olds remedy to illegal management-union aggreements on hiring practices has been terminated.

As of November 1, 1958, parties to union security and hiring practice agreements must have completed corrective steps with respect to all factors not meeting legal restrictions. Subsequent to that date, any employer or union that uses discriminatory practices in hiring or controlling the hiring of personnel will be assessed back wages, dues, etc., from the date an affected applicant applied for the job.

In view of the fact that the Brown-Olds decision has since been interpreted to apply to both employer and union, possible financial trouble for producers who have not complied is obvious.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# 3 reasons why you should specify NORDBERG GRINDING MILLS

### 1. Advanced Engineering

Nordberg mill design reflects significant technological improvements that may measurably affect your installation and operating costs. Sealed trunnion bearings; positive bearing lubrication; optimum life of wearing parts are among the features that will benefit you.

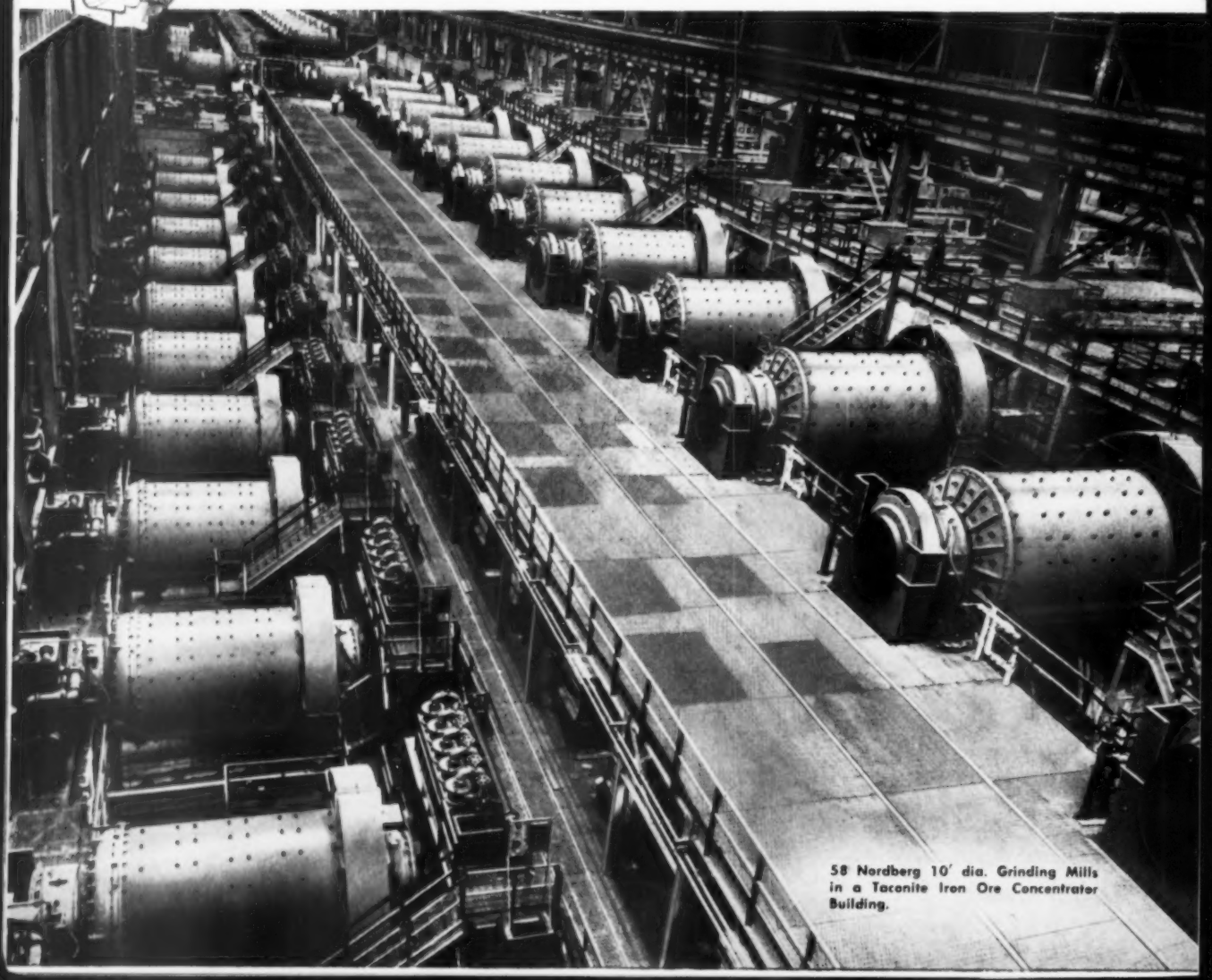
### 2. Quality Manufacture

Nordberg Mills are (1) precision built to rigid specifications in shops renowned for (2) skilled manufacturing personnel, and (3) modern machine tools and equipment to assure quality workmanship. Good reason why the name *NORDBERG* has always signified the *ultimate* in mining, quarrying and process machinery.

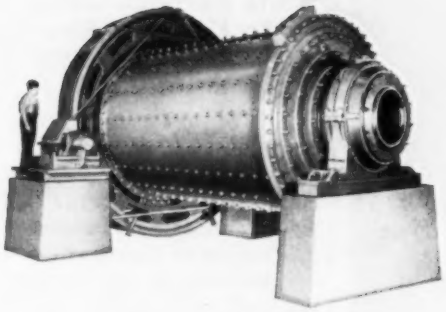
### 3. Dependable Operation

A team of experienced application engineers with a sound understanding of your milling operations qualifies Nordberg to serve you. More important, it assures you of the right machinery for the job . . . machinery that must be dependable and will continually produce to your specifications.

Nordberg Grinding Mills are built to meet specified conditions for wet or dry grinding—in the manufacture of cement; the fine reduction of metallic and non-metallic minerals; and in numerous other processes where friable material must be comminuted to fine sizes at low cost per ton. They are available with grate, overflow or peripheral discharge . . . and are built in sizes from 6 feet to 13 feet in diameter and up to 50 feet in length.

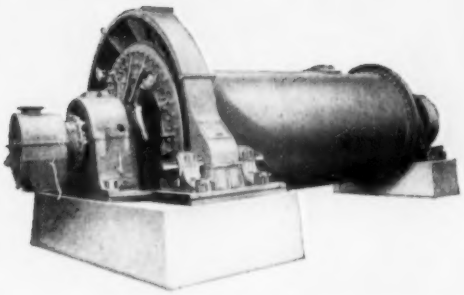


58 Nordberg 10′ dia. Grinding Mills in a Taconite Iron Ore Concentrator Building.



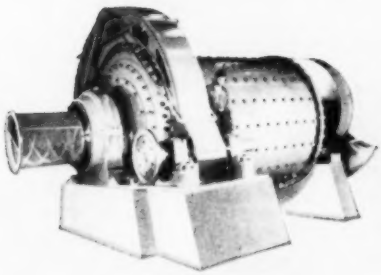
## ROD MILLS

**For the coarser or primary grinding stages of milling plants.**



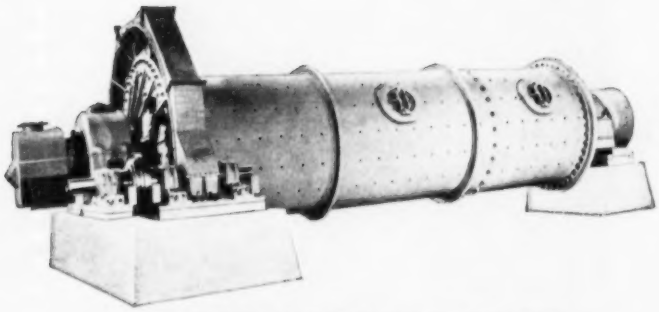
## TUBE MILLS

**These Nordberg units are used primarily where extremely fine grinding is required.**



## BALL MILLS

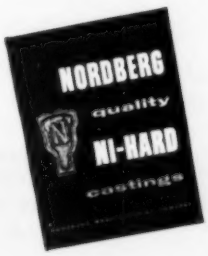
**Having principal application in the fine grinding of ores, and minerals, and as preliminary mills operating in tandem or series with tube or compartment mills.**



## COMPARTMENT MILLS

**For multi-stage grinding to ultra-fine specifications, these Nordberg Mills are built in lengths to 50 ft., with two, three, or more compartments.**

*BULLETIN 232 covers the complete line of Nordberg Grinding Mills for efficient, low cost processing of ores and industrial minerals. Write for a copy today.*




*BULLETIN 263 describes the advantages of using Nordberg "NI-HARD" for mill liners and other machinery components subject to rapid abrasive wear. Copy on request.*

**NORDBERG MFG. CO., Milwaukee 1, Wisconsin**

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NORDBERG MACHINERY

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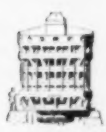

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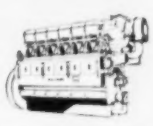
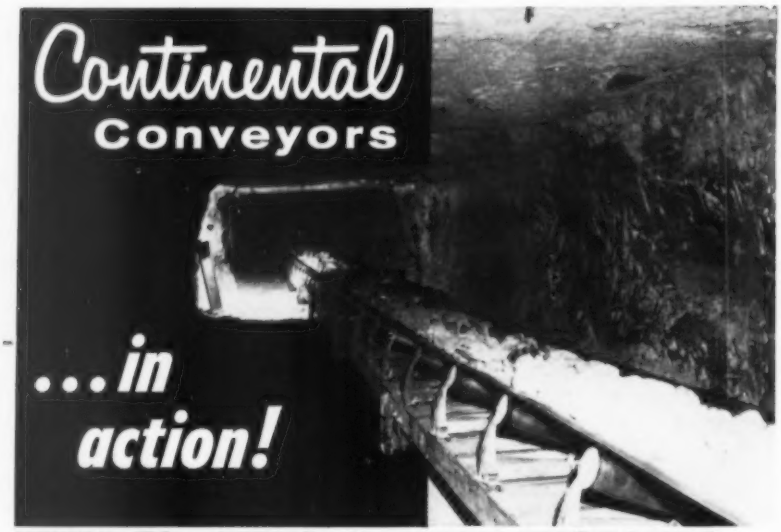
SYMONS CONE CRUSHERS

NORDBERG MINE HOISTS

SYMONS VIBRATING GRIZZLIES and SCREENS



NORDBERG ENGINES



— at INTERMOUNTAIN CHEMICAL COMPANY

Green River, Wyoming

FOUR YEARS of continuous heavy hauling, without breakdown or repair — or even greasing! That's the record compiled by this Continental conveyor system operating in the mines of the Intermountain Chemical Company, at Green River, Wyoming.

The one mile system consists of three units using 36" x 5" Continental U. S. T. Idlers on steel frame, operating at the speed of 300 feet per minute and delivering 350 tons per hour, three shifts per day, five days per week.

If your tough hauling jobs demand economical and dependable operation with low maintenance cost, let Continental engineers work it out for you.

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*Enter 30 on card, page 165*


## White Portland Cement To Be Made by Riverside At New W. Coast Plant

John M. Kinard, president of Riverside Cement Company, Riverside, Calif., division of American Cement Corporation, has announced the purchase of properties containing raw materials suitable for the production of high-quality white portland cement. This purchase is the result of extensive exploration work and an intensive drilling program covering several months.

The properties involved are in close proximity to the company's Crestmore plant near Riverside, where the new product will be manufactured. Tentative orders for production equipment are being placed with F. L. Smidth & Company of New York and Copenhagen. Howard Starke, vice-president and technical director, and S. Rikhof, chief engineer, have gone to Copenhagen to confer with F. L. Smidth on both engineering and equipment.

For the last several months the Riverside Cement Company has been engaged in studies relative to the production of white cement, and its facility will be the only West Coast plant producing white cement.

## Photographing Bag Shipments Reduces Damage Claims 80%

Officials of a chemical firm which uses a Polaroid Land camera to photograph all bag shipments *via* box car, report demage claims have been cut by 80 percent. The photos serve to illustrate how merchandise was secured at the time of loading. If damage occurs, the photos help to determine whether faulty loading or faulty handling by carriers was responsible.

Land cameras are preferred for this operation since pictures can be obtained rapidly and attached to loading diagrams.

---

Two of six new freshmen scholarships, each worth $500 per year, have been made available to the Missouri School of Mines and Metallurgy, Rolla, Mo., by the Southwest Lime Company of Neosho, Mo. Holders of these scholarships for the 1959 school year are Thomas Lee Carter, Roscoe, Mo., and Richard L. Reyburn, Richmond, Mo.

# WHEELABRATOR® GLASTUBE

## Dust Collectors work where it's HOT

OVER A MILLION CU. FT. OF GAS EVERY MINUTE
IS FILTERED THROUGH GLASS BAGS
IN WHEELABRATOR DUSTUBE COLLECTORS

Wheelabrator engineers are fully experienced in designing dust and fume collection equipment for high-temperature applications using Glastube glass fabric filter bags. Over the past five years, many Glastube installations have been made to handle hot gases . . . over a million cu. ft. of gas is filtered every minute in these applications.

Glastube collectors provide unexcelled (nearly 100%) consistent efficiencies. Temperature up to 550°F in closed baghouses and inlet temperatures up to 750°F are handled without difficulty. Corrosion due to moisture can be eliminated when higher temperatures are required. Cooling equipment is either unnecessary or can be materially reduced. No shaking or moving parts are required; collected material is discharged by repressuring.

If your problem is the ventilation of kilns, furnaces, kettles, driers and similar high temperature operations, it will pay you to investigate Wheelabrator Glastube Dust Collectors. Write today for full information.

*Send today for your free copy of the new brochure, "Industry relies upon Dustube Collectors for efficient dust and fume control." Ask for Bulletin No. 562-D.*

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BEST BUYS IN NEW AND USED EQUIPMENT

*Enter 32 on card, page 165*


## New Haven Trap Rock Co. To Erect Screen House With 3,000-Ton Capacity

Plans for the construction of a new screen house have been announced at the New Haven Trap Rock Company plant at North Branford, Conn. An expansion program will include additional crushing equipment and an increase in screening and storage areas which will permit doubling the production of smaller sizes of crushed trap rock.

The new screen house will be built adjacent to the site of the present, 45-year-old structure, which will be dismantled. The proposed building will be 100 ft. high (the equivalent of a 10-story building), 138 ft. long, and 40 ft. wide. Storage capacity will reach 3,000 tons, and in a normal 8-hour day each of the six 500-ton bins will probably be filled twice.

A 5½-ft. Symons short head cone crusher will more than double current production of ⅜-in. stone, as well as ¾- and ½-in. sizes.

## P.C.A. Adds New Members—Extends Services in 2 States

The Portland Cement Association has announced the election of four new member firms, and the extension of its field service activities into northern California and Oregon.

The four new members of the Association are: the Halliburton Portland Cement Company, Corpus Christi, Tex.; the Saskatchewan Cement Company, Ltd., Regina, Sask., Canada; the Northern California Division of Ideal Cement Company, San Francisco, Calif.; and the Oregon Division of Ideal Cement Company, Portland, Oreg. The new members bring the total membership of the Association to 74.

Re-establishment of Association field service in northern California will be accomplished through a suboffice of its Los Angeles district office, to be established in San Francisco in January. Service to cement users in Oregon will be furnished through the Association's Seattle district office.

## Lehigh U. Establishes Fund Honoring George F. Pettinos

Contributions totaling $2,000 to establish the George F. Pettinos Memorial Fund at Lehigh University, Bethlehem, Pa., were announced by Elmer W. Glick, university treasurer.

The fund is being started with gifts from members of the family and business associates in memory of the late George F. Pettinos, an alumnus of Lehigh University with the class of 1887, who died on February 22, 1958. He was 96 years old.

Mr. Pettinos founded George F. Pettinos, Incorporated, a graphite and silicon business, and developed it into worldwide prominence.

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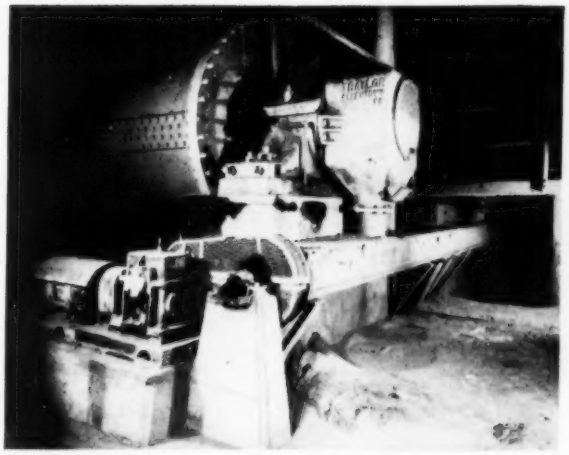
The management of the Sayre and Fisher Company, Sayreville, N. J., has announced the completion of a 750-cu. yd. per day capacity plant for the production of Aglite near Minneapolis, Minn. This installation is operating under a licensing agreement.

## Portland Cement Shipments From Canada Dip in October

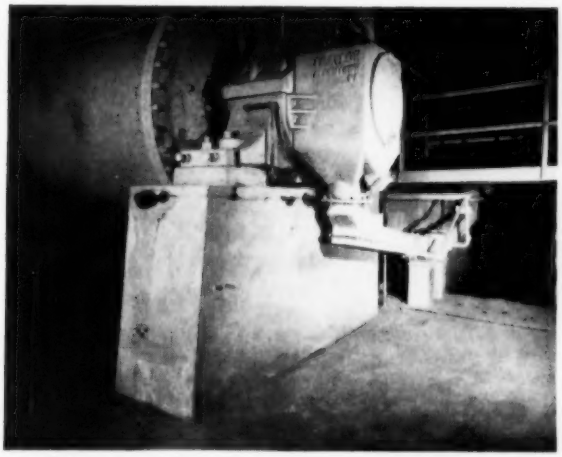
Canadian manufacturers of portland cement shipped or used 696,722 tons of cement in October, 1958, compared with 737,622 tons in the previous month. In 1957, the October shipments amounted to 682,349 tons. Actual production for October, 1958, was 681,754 tons compared with 639,045 tons in the corresponding month of 1957.

| | October | | Year to date | |
|---|---|---|---|---|
| | 1957 | 1958 | 1957 | 1958 |
| | (Short Tons) | | | |
| Stocks at plants and warehouses at beginning of period | 321,816 | 419,217 | 285,516 | 453,041 |
| Production | 639,045 | 681,754 | 5,367,814 | 5,379,202 |
| Shipments to customers and used at plants | 682,349 | 696,722 | 5,368,232 | 5,429,724 |
| Stocks at plants and warehouses at end of period | 278,512 | 404,249 | 278,512 | 404,249 |
| Exports, October | 44,188 | 26,251 | 302,062 | 132,595 |
| Imports, October | 4,850 | ... | 81,741 | ... |
| September | 15,503 | ... | 76,891 | ... |
| August | 13,426 | 5,501 | 61,388 | 29,184 |
| July | 10,385 | 3,041 | 47,962 | 23,684 |

## The Arithmetic of Materials Handling



**BEFORE:** **Dirt, noise and mechanical breakdown** were constant problems in this cement plant, where two mechanical conveyors were used to collect raw materials. A 5 h.p. motor driving auxiliary equipment wasted valuable space and power, required frequent maintenance. Spillage clean-up wasted costly man-hours.



**AFTER:** **Clean, simple, quiet.** Notice the difference two 8" F-H Airslide® fluidizing conveyors have made. No dangerous moving parts. Nothing to lubricate. Auxiliary equipment and foundations are gone. Power needs are now only 1/8 of previous needs. Fluidizing saves wear and maintenance.

# AIRSLIDE® Fluidizing Conveyor

## minimizes material loss . . . maintenance . . . moving parts

If you are now handling dry, pulverized materials, the F-H Airslide Fluidizing Conveyor can help you stop noise, and air-pollution, as well as speed flow and reduce maintenance cost.

### Simplicity Itself

F-H Airslides fluidize dry, pulverized materials with low pressure air.

These materials literally flow at high speed, down the inclined conveyor. Power requirements are small.

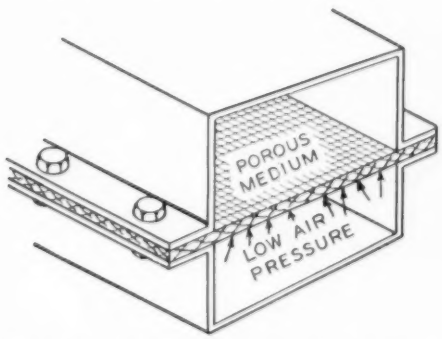
### Flexibility, Low Cost

For unlimited applications, Airslide conveyors take up little space, and can be used singly and in combination with other Fuller pneumatic conveying systems. The movement of fluidized material can be around corners, between floors, through walls—nearly any conveying distance.

### Better Housekeeping

Can Fuller conveying systems help eliminate your housekeeping problems—cut your maintenance and handling costs? Write today, outlining your problem in handling dry, finely-divided materials. Fuller will gladly make appropriate recommendations.

## "Pulverized Materials Flow Like Water!"




**AIRSLIDE PRINCIPLE:** Porous supporting medium divides conveyor section into two "compartments". Dry material flows down inclined conveyor, fluidized by low-pressure air entering beneath porous medium.

FULLER COMPANY GENERAL AMERICAN TRADE MARK

**Fuller** ....pioneers in harnessing AIR

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**100 Bridge St., Catasauqua, Pa.**
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*"See Chemical Engineering Catalog for details and specifications".*

# 3

## examples of

## TSP

## superiority

These are only a few of the hundreds of success stories from Companies using "Tool Steel Process" hardened products, success stories that mean thousands of dollars saved in maintenance, replacement and downtime costs. TSP hardened products were selected because actual service records in the nation's leading cement companies prove conclusively their superiority over any competitive material formerly used. All TSP products carry a written guarantee that they will give longer life in the same service than any other product.

Write today for Bulletin 452 showing TSP products and applications in the Cement Industry.

THE TOOL STEEL GEAR AND PINION CO.
CINCINNATI 16, OHIO, U. S. A.

MEMBER OF ACMA

AD No. 1017

The Standard of Quality Since 1909 for Gears • Pinions • Rolls • Wheels and Other Hardened Products

## TSP sprockets

Installed in Cement Plant (name on request) Aug. 1947 on head of aggregate elevator. Competitive sprockets lasted only 12 months. TSP superiority—5.7 to 1 to date, and showing practically no wear.

To illustrate just how this superiority is achieved, note this double sectional view of a "Tool Steel Process" sprocket. Both cutaway sections have a uniform full depth (1/6 to 1/5 distance across pitch line) hard case backed by properly refined core. TSP sprockets, by actual tests on file, will outlast ordinary unhardened sprockets by at least 5 to 1, will outlast other heat treated sprockets by at least 2½ to 1. In addition, their smooth, hardened, non-wearing surfaces greatly prolong chain life.

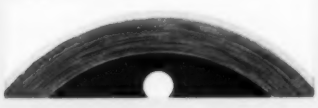
## TSP drum

Installed on crane at Calaveras Cement Co., San Andreas, Calif. After 4 years of service there is no sign of wear, three times the life of drums formerly used. The file hard surface means smooth, true grooves for extra long cable life.

The cross section of a TSP drum groove illustrated here, shows the depth and uniformity of hardness that gives smooth, true, wear resistant grooves. The grooves on TSP drums stay that way for years. Ordinary drums have soft groove surfaces. They develop wear, corrugations thus causing chafing, resulting in frequent costly cable and drum replacements. When you use TSP drums, your savings in cables alone will pay for the drums because to date no TSP drum has ever worn out.

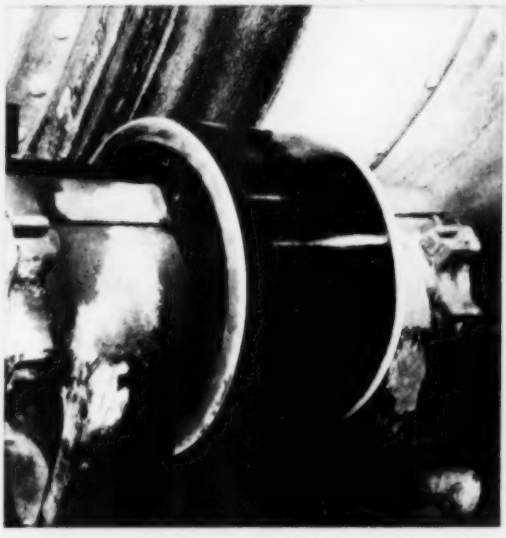
## TSP trunnions

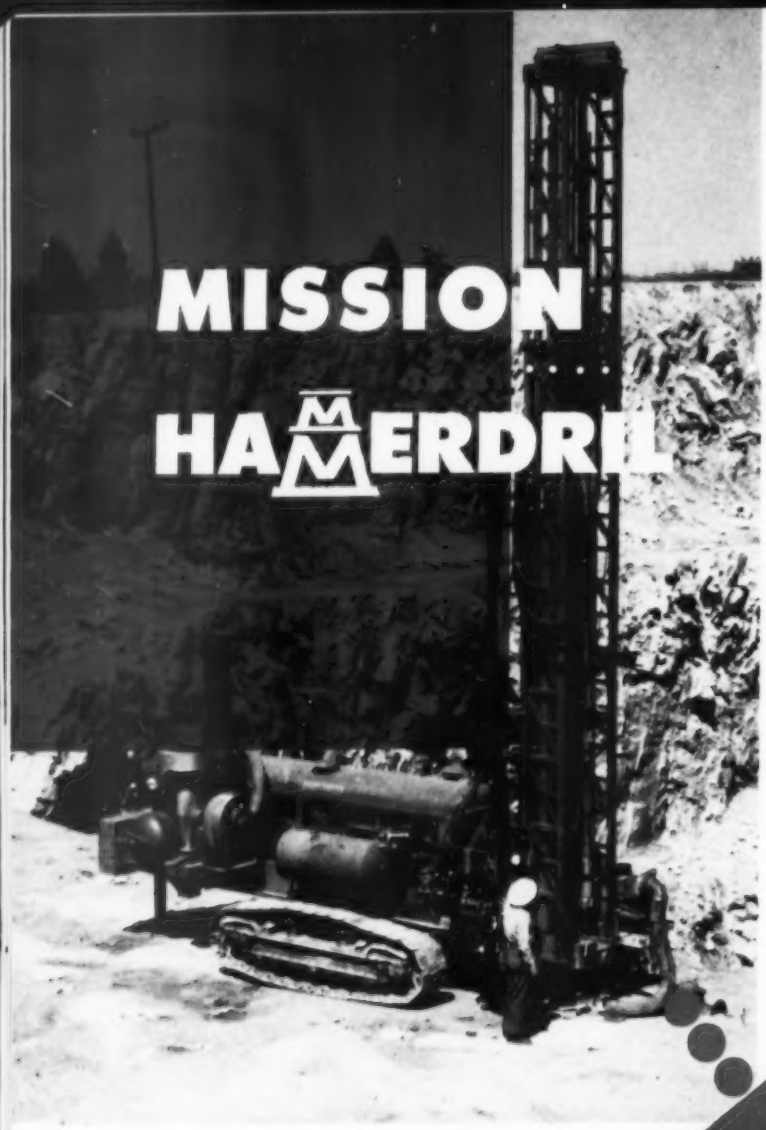
Installed at No. 1 kiln at Petoskey Portland Cement Co. in 1940 prior to its acquisition by Penn-Dixie Cement Corporation. Installations on the additional kiln were completed in 1943. None have worn out to date. All 18 TSP trunnions are now in use. In addition to their long service life, they have been instrumental in smoothing the surface of the large tires.



The predecessor company wrote us " . . . . . on our #1 kiln we ran one (TSP trunnion) 7 years and one 8 years before replacing bearing . . . on #2 kiln we ran one 12 years and one 11 years . . . on #3 kiln, 6 years, 7 years, 8 years . . . on #4 kiln, 10 years, 8 years . . . also good results with both TSP rolls and shafts".

Cross section of TSP Trunnion illustrated shows depth of hardness resulting in phenomenal long wear and the core refined for toughness and ductility for maximum strength.



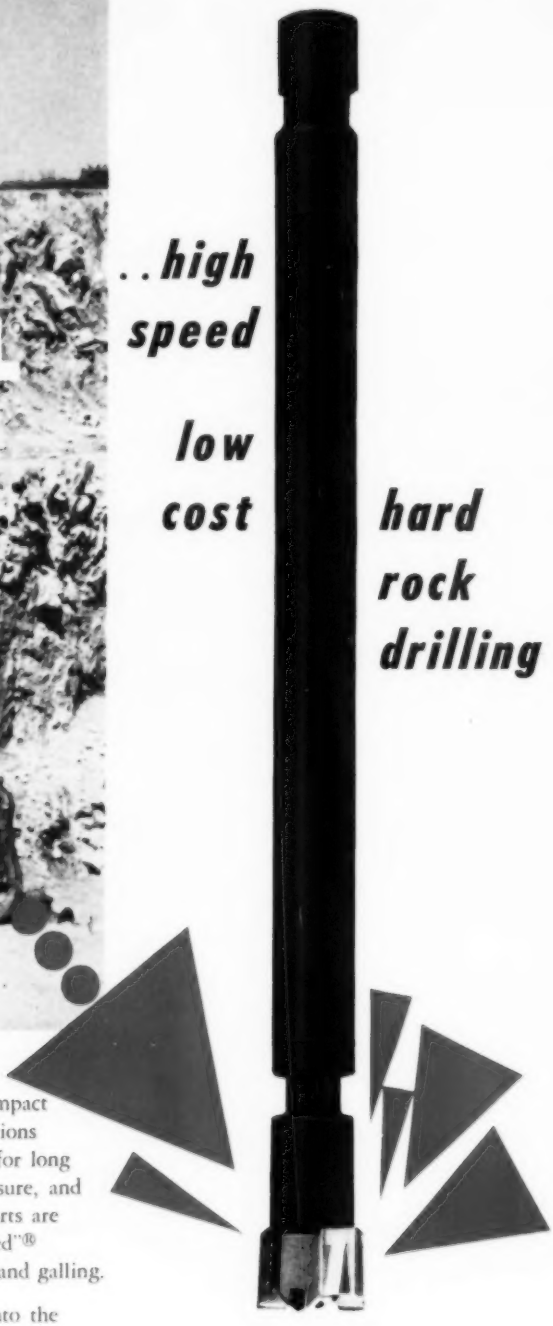


# MISSION HAMMERDRIL

*..high speed*

*low cost*

***hard rock drilling***



Patents Issued And Pending

The Mission HAMMERDRIL® is a "bottom hole," pneumatic impact tool, rugged enough to drill through the hardest of rock formations *day in and day out*. The HAMMERDRIL is designed and built for long life, low upkeep. There are two moving parts in the high pressure, and only three moving parts in the low pressure tool. All impact parts are of heat treated high alloy steel. All moving parts are "Missionized"® —a special surface treatment—to reduce corrosion, friction, wear, and galling.

Eight years of development and testing by Mission have gone into the HAMMERDRIL, to make it reliable and economical in use. In addition, the HAMMERDRIL can be used on your present standard rotary rig with suitable air compressor capacity.

The Mission HAMMERDRIL is sold and serviced throughout the United States. Write to Mission for more information and for what HAMMERDRIL can do for you—faster drilling, lower cost per foot.

*Nothing but the finest will bear the name of*

**MISSION MANUFACTURING CO.**

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89—501

## Morrison Named President Of Peerless Cement Co.— Other Changes Announced

Robert J. Morrison, vice-president and secretary of American Cement Corporation, has been elected president of Peerless Cement Company, a division of American with headquarters in Detroit. Mr. Morrison will continue as a vice-president and a member of the board of directors and the executive committee of American.

Mr. Morrison, who was formerly executive vice-president, administration, of Peerless, succeeds Walter C. Russell, who will continue as vice-chairman of the board and chairman of the executive committee of American. He joined Peerless as a plant engineer in 1945. He became assistant to the president in 1953, and executve vice-president, administration, in 1956. He was on leave to American during its first formative year.

Mr. Russell was largely responsible for the outstanding performance of Peerless Cement during the last quarter century. Twenty-five years ago he took over the firm as its receiver in bankruptcy and built it into a strong organization, operating three modern cement plants in southeastern Michigan.

Paul J. Rutan, vice-president of American and vice-president, sales, of Hercules Cement Corporation, a division of American, has retired.

Robert J. Morrison

Paul J. Rutan

H. L. Henson

R. L. Fosdick

Mr. Rutan had been head of the sales force of Hercules for more than 20 years and was largely instrumental in building that corporation's strong sales organization.

Other promotions announced were as follows: H. L. Henson from vice-president, engineering, of Peerless, to senior staff vice-president of American, and Roger L. Fosdick, from assistant to the president, to secretary of American. Mr. Henson directed a considerable volume of engineering work required in rebuilding two original plants of Peerless and constructing a new plant. He becomes American's senior staff representative for operational matters. Mr. Fosdick formerly held a major operational assignment with Riverside Cement Company, another American division, and during the last year has been active as a senior member of the American staff.

## Vulcan Materials Company Acquires Gary Slag Corp.

According to an announcement released by the Vulcan Materials Company, an affiliate of the Birmingham Slag Company, the capital stock of the Gary Slag Corporation, Gary, Ind., has been purchased by Vulcan.

Gary Slag will be dissolved as a corporation under the laws of Indiana, and all of the obligations of that concern will be assumed by Vulcan.

It was indicated that the acquisition was made by Vulcan to make more construction material items available to its Consumers Company Division in Chicago.

---

According to *Limeographs* (December, 1958), it has been reported that the largest cement plant in the world will be built at an undisclosed site in central Siberia. Its capacity of 34,500 bbl. per day will be derived from only two kilns. These, reportedly of French manufacture, are to be 20 ft. in diameter and 574 ft. long.



← Enter 36 on card, page 165

THE ALLIS-CHALMERS TR-260 ROCK WAGON

# Extra power and capacity for bigger hauling output

## 230 HORSEPOWER • 20-TON PAYLOAD

Here's news worth swinging around to see...

The new TR-260 delivers up to 15 percent more horsepower than other rock wagons in its size range . . . extra power for better acceleration from the pit . . . faster hauling cycles. The TR-260 also gives you more load-carrying capacity than ever before . . . two extra tons. You'll like the new TR-260 design . . . and the low TR-260 price. Get facts and figures . . . and a hauling demonstration at your pit or quarry. You'll be convinced—and dollars ahead if you buy.

**230 horsepower**—more than 11.5 available horsepower for every payload ton.

**90-degree turns**—you save an average of 15 seconds per cycle when spotting under shovels or backing up to hoppers.

**U turns in only** 24 ft, 4 in.—you require 20 to 30 percent less turning space than wagons of comparable size.

**High ground clearance**—with 25¾-in. wagon clearance, the R-260 rolls over high spots. No hang-up problems.

**Five speeds to 28 mph**—you shift quicker, easier with constant mesh transmission and new actuated transmission brake . . . no double clutching.

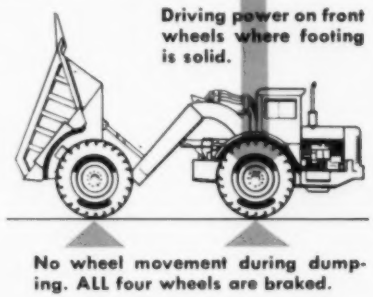
**Bigger tires**—26.5 x 25 low-pressure tires swallow humps and holes with less chance of damage to themselves . . . far less shock to the entire unit. Better traction and flotation, too.

**68-degree dumping angle**—material rolls out of the clean, unobstructed bowl in a hurry.

TS-260
MOTOR SCRAPER
17 cu yd heaped
230 horsepower

TR-260
ROCK WAGON
20 tons
230 horsepower

**Fixed wheel base—solid as a rock . . . and safe . . .** The TR-260 dumps with all four wheels braked . . . no need to back up tractor to get loads out. And on the getaway, power is on the forward wheels where footing is solid. No bog-down on embankment lip.




**Interchangeability for added earnings . . .** The T-260 tractor hauls either the R-260 wagon or S-260 scraper interchangeably. Use the TR-260 for off-the-road hauling—then switch to the TS-260 for stripping or contract earth moving. Earnings are increased . . . you get 100 percent tractor efficiency and reduce equipment investment at the same time. *Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.*

move ahead with **ALLIS-CHALMERS**...power for a growing world

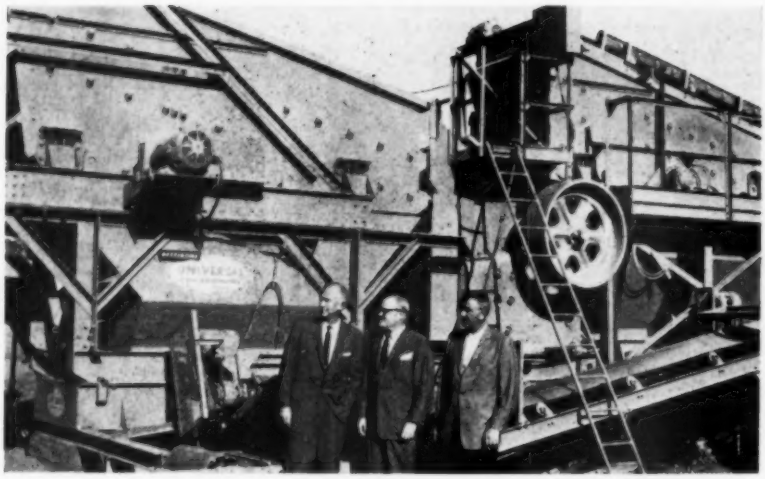
Enter 39 on card, page 165

## Outsize Portable Crusher Speeds Aggregate Output For Giants' New Stadium

Competing these days for attention with San Francisco's ever-prevalent fog, is a cloud of dust on Candlestick Point—site of the San Francisco Giants' new stadium, to be occupied next year.

This dust is made by the largest portable crushing plant in existence — a Universal 293QS — which is grinding out 200,000 tons of aggregate for parking-area base material and asphalt surfacing.

The San Francisco firm of Charles L. Harney, Inc., has moved more than 85 percent of 3,500,000 cu. yd. of rock to fill tidelands and make a cut for the grandstands.



This big Universal 293QS warms up to turn out 200,000 tons of aggregate for the San Francisco Giants' new $10,500,000 baseball stadium. Beside the crusher are Bill Rigney, the Giants' team manager (left); Horace C. Stoneham, president of the club (center); and Carl Hubbell, farm chief.

### $20,000,000 Plant of Ideal At Ada Begins Production

Ideal Cement Company has begun production at its new $20,000,000 plant in Ada, Okla. When entirely completed next May, the facility will have a capacity twice the former output. It will produce at an annual rate of 5,500,000 bbl.

Equipment includes the following: two rotary kilns, each 450 ft. long and 12 ft. in diameter; two raw mills, and two finish mills, 11 ft. in diameter by 32 ft. long, each powered by a 2,000-hp. motor.; two air-quenching coolers, 6 ft. wide by 100 ft. long.; and nine cement storage silos, each 36 ft. in diameter and 140 ft. high. Total storage capacity of the facility is 500,000 bbl.

A 5½-mile conveyor system between the quarry and the plant will be the longest permanent conveyor ever constructed.

### $2,000,000 Dust Control Plan Under Way at Lehigh Plant

Lehigh Portland Cement Company, Allentown, Pa., has announced plans for a $2,000,000 dust control program at its Fogelsville, Pa., plant. Electrostatic precipitators will be installed to catch dust from the kilns, and mechanical bag collectors will be used to capture dust from stone driers.

Phillip A. Groll, executive vice-president, manufacturing, stated that the management hopes to eliminate 90 percent of the dust emitted from the stacks. For the last 10 years the firm has considered plans for dust control, including the possibility of building an entirely new plant at a reported cost of $24,000,000.

The project is to begin immediately, and it is expected that the dust-collection equipment will be in operation by next winter.

● The old taunt, "You can't punch your way out of a paper bag," is the basis for a popular stunt on the County Fair NBC network television show. Many prominent sports personalities have tried unsuccessfully to break the giant version of a regular multiwall bag manufactured by the Union Bag-Camp Paper Corporation. It is used for bagging cement and other industrial products. James J. Braddock, former heavyweight champion of the world, is pictured here (left) with the 8-ft. high, 3-ft. wide bag. Herbert Landon, production supervisor of the show, stands at his left.

### International Min. & Chem. Forms Phosphate Division

T. M. Ware, president of International Minerals and Chemical Corporation, recently announced that the firm has started a program to streamline its organization.

The move will consolidate the phosphate chemicals and phosphate minerals divisions into a single phosphate division, and will also unite research, engineering, and development. George W. Moyers, vice-president, will head the new phosphate division, and Dr. I. Milton Le Baron, research vice-president, will direct the new staff unit.

### Kingston Trap Rock Co. Men Take a Chance—and Win

Waiting paid off for the employees of the Kingston Trap Rock Company last year. In June they demanded a wage increase of 10 cents per hour.

"Business is down; we can't afford it," was the answer they received from Asa Farr, company vice-president. But he indicated that if the men would stay on their jobs and the company made a profit, they would share in it at the end of the year. They consented to take a chance on a business upturn.

Kingston Trap Rock did make a profit, and the men shared the take —$67,000. Each one received a bonus of $150, which comes to about 10 cents an hour for each hour worked since June.



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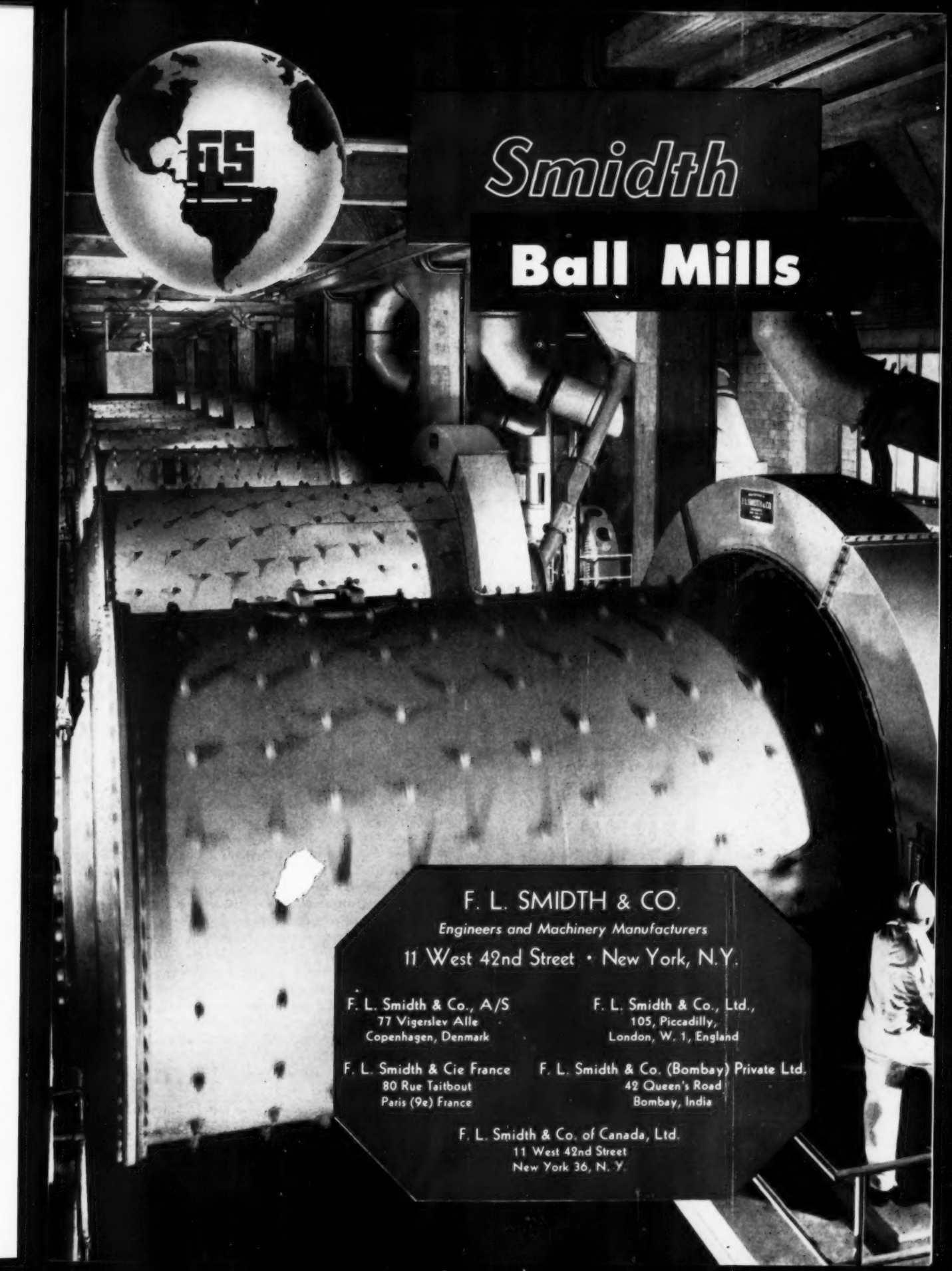


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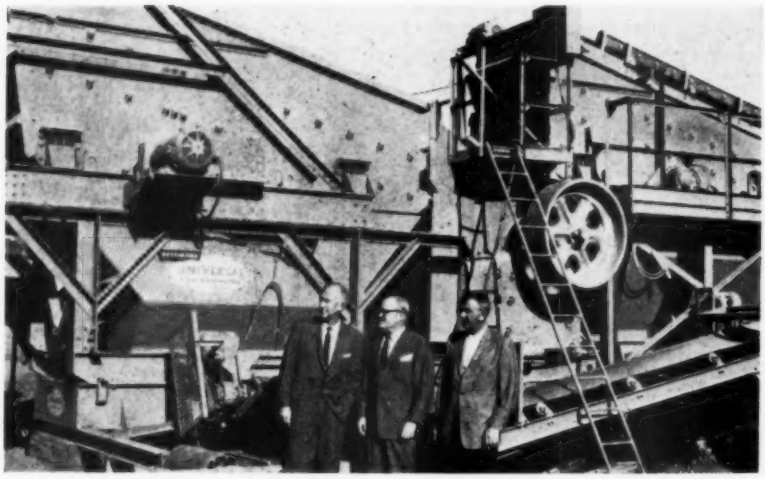

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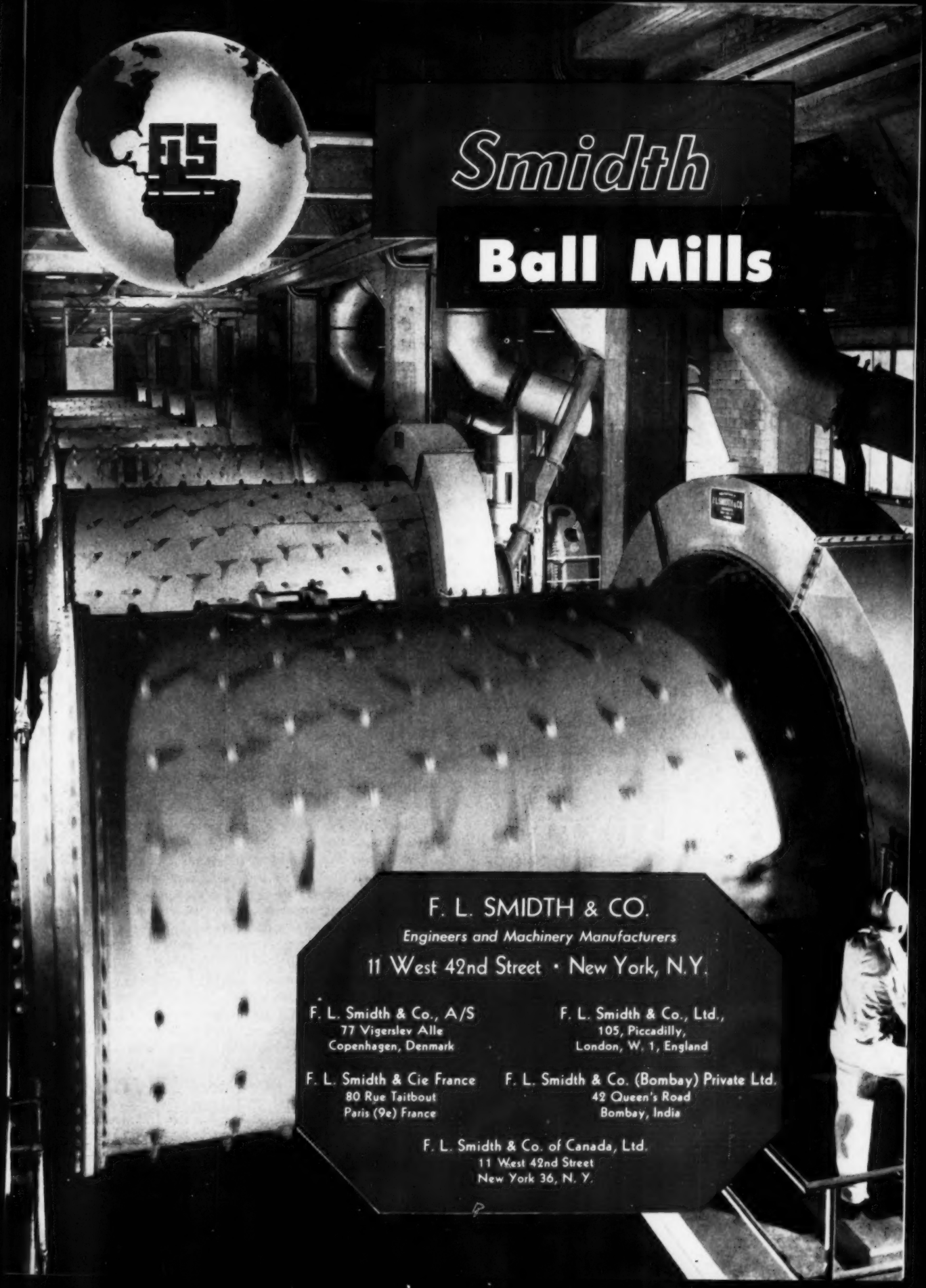


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# *get tough*

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■ Wherever rock and gravel, coal and ores come in violent contact with machine and equipment parts, Lukens "T-1" steel – *especially extra tough 321 min. BHN quality* – fights back at wear and abrasion with spectacular success.

It is readily fabricated. You can form or weld it in the field or shop, from stock plate sizes immediately available. It can be used to replace or repair worn bucket teeth, truck and mine car bodies or liners, dozer blades, dipper sticks, crusher teeth, chutes, and many other parts.

Far stronger for its gage than conventional steel, it requires less metal to do equivalent jobs. It remains tough even at sub-zero temperatures.

Contact your nearest warehouse listed below, or write Manager, Marketing Service, 147 Lukens Building, Lukens Steel Company, Coatesville, Pennsylvania. Ask for special bulletin, *"Lukens 'T-1' for Toughness."*

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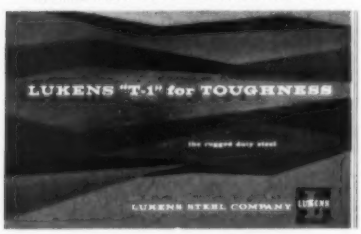


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**Montreal, Quebec, Can.,** Drummond, McCall & Co., Ltd., 930 Wellington St.

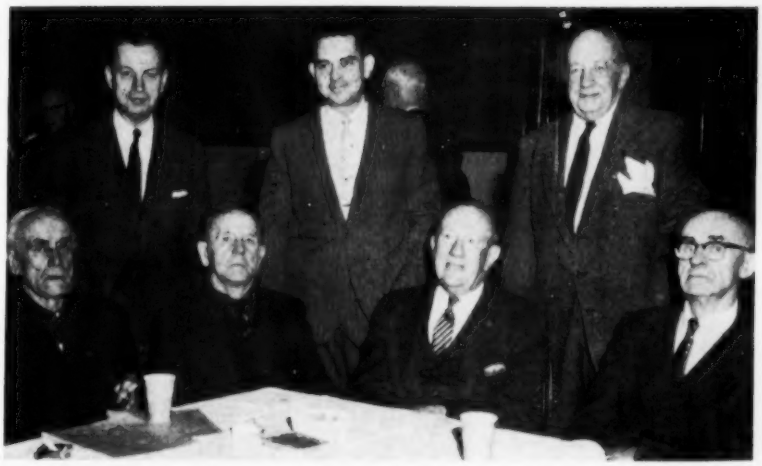
**HELPING INDUSTRY CHOOSE STEELS THAT FIT THE JOB**

## W. F. Law and R. J. Mahon New Lone Star Directors—3 Promotions Announced

H. A. Sawyer, president of Lone Star Cement Corporation, has announced the election of Walter F. Law and R. J. Mahon as directors of the corporation. Mr. Law has been executive vice-president since February, 1957, and Mr. Mahon vice-president for sales since June, 1952. Mr. Law has been with the firm in sales and management positions since 1925. Mr. Mahon started with the Lone Star sales organization in 1924.

Changes in corporate officerships announced by the board include the election of three executive vice-presidents in addition to Mr. Law, who now becomes executive vice-president for administration. Mr. Mahon is now executive vice-president, commercial.

C. C. Van Zandt moves from vice-president, operations and engineering, to executive vice-president in charge of the same functions. John H. Mathis, vice-president and corporate secretary, is now executive vice-president and secretary. H. E. Green, treasurer and assistant secretary, has been made vice-president and treasurer.



Among those who attended at the Old Timers' Party given by the Huron Portland Cement Company for the retirees of its Alpena mill and quarries are left to right (standing): H. Ripley Schemm, vice-president in charge of operations; Charles L. Howlett, assistant mill manager; and William G. MacDonald, mill manager. (Seated) left to right: Henry Hasse, 88, who retired in 1940; William Hasse, (his brother) 82, a 1946 retiree; Paul H. Townsend, president of the Huron Portland Cement Company; and Leo Litke, 74, who retired in 1949.

## Huron Portland Cement Co. Entertains Alpena Retirees

On December 6 the Huron Portland Cement Company entertained more than 100 retirees of its Alpena, Mich., mill and quarries at a party in Alpena Memorial Hall.

All of the retired employees present—ranging in age from 65 to 88 — were presented with lifetime passes to any property of the Huron Portland Cement Company by the mill manager, W. G. MacDonald.

## Cement Reference Works Issued by Swedish Cembureau

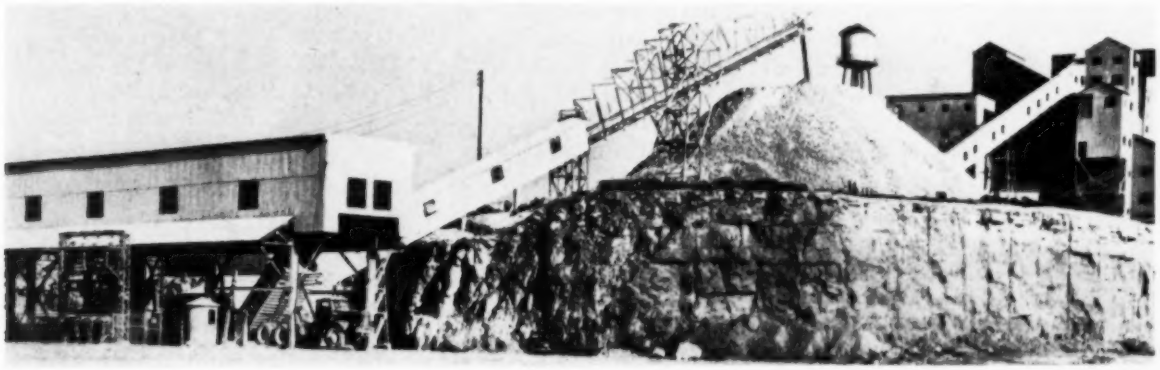
Cembureau, Cement Statistical and Technical Association with offices at Malmo, Sweden, has published a *World Cement Directory*, containing the addresses of cement companies throughout the world.

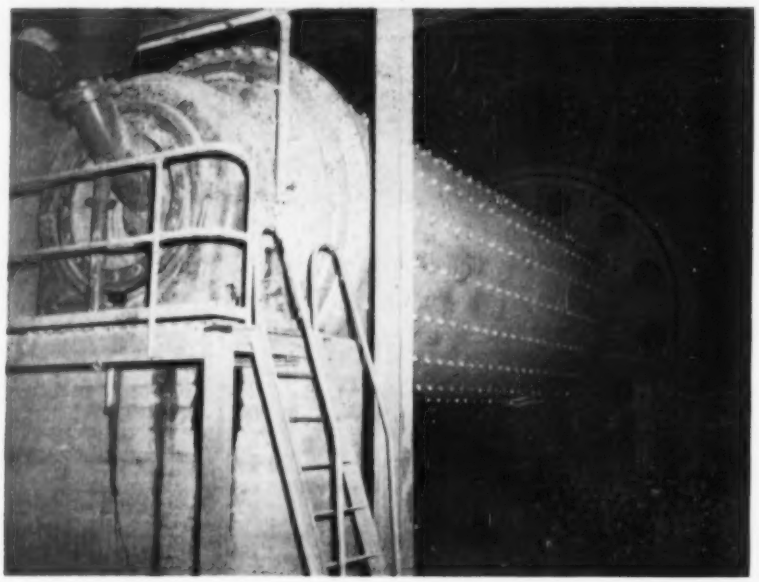
In addition, the list contains the number and type of kilns, capacity, production, types and brands of cement produced by each firm, and maps showing the capacity and location of each plant. The directory consists of 157 stencilled pages in paper binding. Price, 45 shillings. Available from Cembureau, P. O. Box 245, Malmo, Sweden.

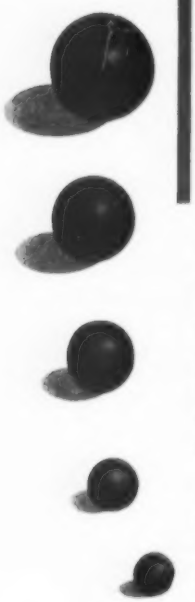
Another recent publication of Cembureau is the *Review of Standards for Cements Other than Portland*. This work is a companion volume for an earlier manual, *Review of Portland Cement Standards of the World*.

The newly issued volume contains data on about 80 standards covering nearly 200 qualities of blast-furnace, super-sulphated, pozzolanic, aluminous, blended portland, and natural cements, plus other binding agents mainly based on portland cement and having hydraulic properties. Price, 30 shillings per copy.

A conveyor belt installed in 1953 at the Maple Grove, Ohio, plant of Basic Incorporated, recently carried the 10,000,000th ton of crushed stone and is still in good condition. The Stonore belt, which was made by New York Rubber Corporation, is 794 ft. long and 36 in. wide and moves at the rate of 380 f.p.m. up an 18-degree incline.







GRINDING BALL
WEAR RESISTANCE
INCREASED 400%

**Recent tests in several cement plants have shown that in dry grinding, Calumet Ni-Hard* grinding balls provide a 400% increase in resistance to wear when compared to forged steel balls used in an identical operation. If you operate cement clinker grinders these same impressive savings can be yours.**

**And in wet grinding of copper ore, the same Ni-Hard balls indicate a 40% reduction in grinding balls costs per ton of ore ground!**

**All Calumet Ni-Hard grinding balls are the result of thorough testing and careful quality control. Balls are available from stock in the following sizes: 5/8", 3/4", 7/8", 1", 1 1/4", 1 1/2" and 2". More information is available without obligation—just write!**

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*Enter 44 on card, page 165*

## Sawyer Elected Chairman Of Lone Star Cement— R. A. Hummel to Retire

H. A. Sawyer, president of Lone Star Cement Corporation, has been elected chairman of the board of directors, effective January 1. He

H. A. Sawyer

succeeds R. A. Hummel, who is retiring after having served as chairman since 1952. Mr. Hummel will continue as a director, and Mr. Sawyer remains as president and chief executive officer in addition to his new responsibilities.

Mr. Hummel joined Lone Star in 1919 as superintendent of its plant at Sierras Bayas, Argentina. He served as general superintendent of South American operations before being elected executive vice-president in 1941 and subsequently president.

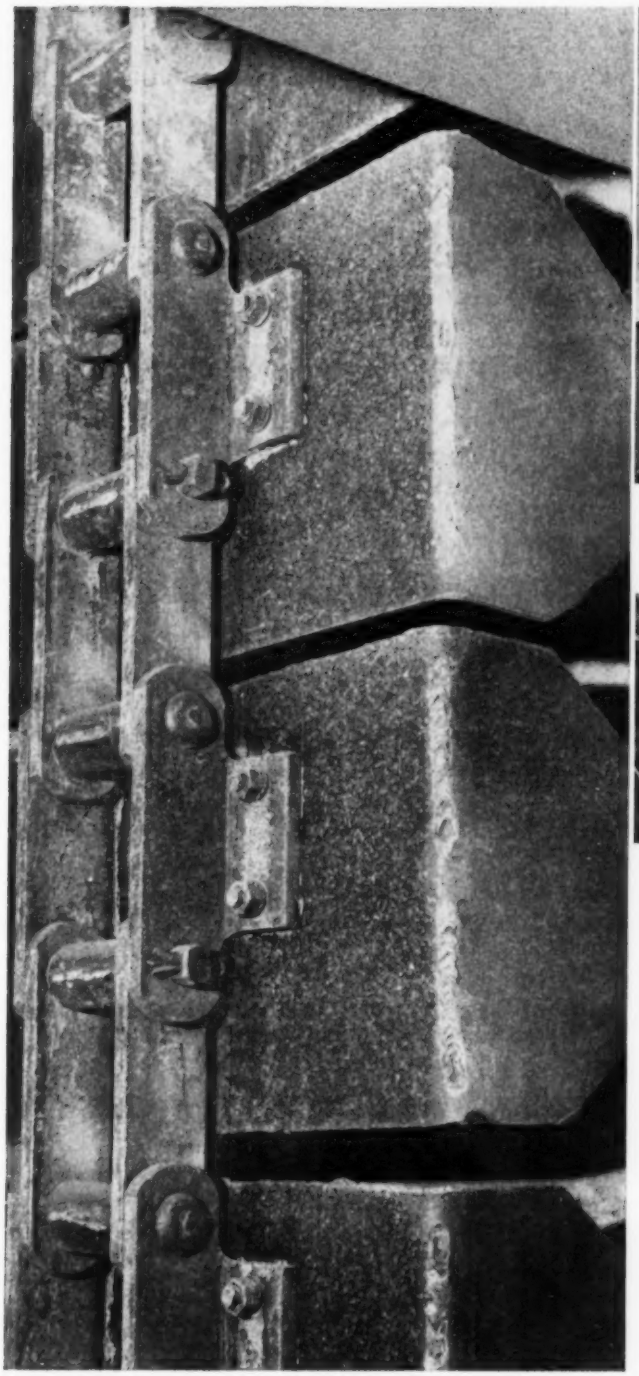
Mr. Sawyer, who succeeded Mr. Hummel as president in 1952, has been with Lone Star since 1925. He served in the Texas Division and at New York and in 1931 became vice-president and manager of the Louisiana Division, the post he held until assuming the presidency.

---

GEORGE H. ELLIOTT has been elected president of Lake Ontario Portland Cement Company, Picton, Ont., it was recently announced. He was also named a director of the company.

**LINK-BELT bucket elevator equipment excels in**

# 9 years of tough cement handling



**Helps Mexico's Cementos Guadalajara S.A. produce 450 metric tons of cement per day**

When this cement producer expanded facilities 9 years ago, Link-Belt elevator buckets, chain and gear drives were chosen to help step up cement output. These durable components have proved their worth on 24-hour service under the most severe abrasive conditions. Fifteen bucket elevators are used in handling various materials in all stages of production.

Link-Belt equipment is producing equally spectacular results wherever industry requires conveying, processing and power transmission that lowers operating costs. For complete information, call your Link-Belt representative.

LINK-BELT

CONVEYORS AND DRIVES

**INSIDE STORY** — Link-Belt steel chain and steel elevator buckets are the heart of this bucket elevator. Link-Belt makes chains, sprockets and buckets to handle all kinds of material, satisfy any application requirement. Steel and cast buckets come in a wide range of types and sizes.

**LINK-BELT COMPANY:** Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

**KOEHRING WORK CAPACITY *in action . . .***

**High-lift 1205 —** Here's a heavy-duty, high-lift shovel (at right) that really puts stripping on a long-reach basis! For instance — with *3-yard* dipper on 40-foot high-lift boom, this Koehring 1205 has 42 foot-10 in. cutting height—at 45° boom angle — and dumps at a height of 31 feet-5 in. *Want more reach?* It also can be used with a 2½-yard dipper on a *50-foot* high-lift boom! This gives you 51 foot-4 in. cutting height — 40 foot-10 in. dumping height at 45° boom angle. On clamshell or dragline work, it handles 3 to 4-yd. buckets on 60 to 170 feet of boom.

**Stripping 35 to 45 ft.** of overburden from a 120-acre area (below), Koehring 605 dragline uncovered a coal vein 5 to 7 ft. thick. Working 18 hours a day, it stripped clay, common earth and shale. Bucket sizes on this heavy-duty 605 dragline range from 1½ to 2½ yards. Boom lengths — 50 to 110 ft., depending on materials. Converts to 36-ton lift crane, 1½-yd. standard or high-lift shovel.

**Feeding gravel** from bank into hopper, Koehring® 805 clamshell crane easily met plant production requirements at this pit. Belt conveyor system carries gravel from pit to crusher. Operators like the 805's ease of control, main-drum power clutches giving accurate "feel" of load, and spring-loaded air-released traction brakes. *You'll* like its big work capacities: 2 to 3-yard clamshell or dragline, 52-ton crane, 2-yard shovel. See Koehring distributor today.

KOEHRING HEAVY DUTY

5814

**KOEHRING** DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis. . .

**Need a lift?** Where you have heavy machinery to install, supplies to unload, materials to stockpile, consider the speed, mobility, and heavy lift service you can get with a Koehring rubber tired crane. Placing a 23-ton pump was easy work for this truck-mounted 545 — it has a top lifting capacity of 45 tons with 40-ft. boom at 15-ft. radius!

Koehring excavators and cranes also manufactured in:
• • • *CANADA • ENGLAND • SPAIN • JAPAN*

## Quick facts on KOEHRING WORK CAPACITY:

| MODEL | TYPE OF MOUNTING | CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.) | |
|---|---|---|---|
| **ON RUBBER** | | | |
| 205 | 3-axle truck, or 21.5 mph Cruiser | 30,000 lbs. | at 12-ft. radius |
| 305 | 3-axle truck, or 18 mph Cruiser | 50,000 lbs. | at 12-ft. radius |
| 330 | 3-axle truck | 60,000 lbs. | at 15-ft. radius |
| 435 | 4-axle truck | 70,000 lbs. | at 15-ft. radius |
| 545 | 4-axle truck | 90,000 lbs. | at 15-ft. radius |
| **ON CRAWLERS** | Size shovel | CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.) | |
| 205 | ½ Cu. Yd. | 20,000 lbs. | at 10-ft. radius |
| 305 | ¾ Cu. Yd. | 30,000 lbs. | at 12-ft. radius |
| 405 | 1 Cu. Yd. | 40,000 lbs. | at 12-ft. radius |
| 545 | (Crane only — 85% rating) | 90,000 lbs. | at 12-ft. radius |
| 605 | 1½ Cu. Yds. | 72,300 lbs. | at 12-ft. radius |
| 805 | 2 Cu. Yds. | 104,200 lbs. | at 12-ft. radius |
| 1205 | 3 Cu. Yds. | 190,000 lbs. | at 12-ft. radius |

## Florida Solite Corporation To Open Its First Plant At Russell, Fla., Location

A new Solite production plant in Russell, Fla., will open on April 1. It will be the first plant to be operated under the newly incorporated Florida Solite Corporation, a wholly-owned subsidiary of Southern Lightweight Aggregate.

Operating on a 24-hour-a-day, 7-day-a-week schedule, the Russell plant will depend upon the Atlantic Coast Line Railroad for shipping throughout the state and surrounding areas. A large percentage of these deliveries will be earmarked for lightweight masonry.

The Southern Lightweight Aggregate Corporation, parent company of Florida Solite, has offices in Richmond, Va.; Charlotte and Raleigh, N. C.; Columbia, S. C.; and Bethesda, Md. It now operates plants in Aquadale, N. C., and Leaksville Junction and Bremo Bluff, Va. The Bremo Bluff plant is the largest in the world producing a controlled lightweight aggregate.

## *Our Cover Picture*

The front cover of this January, 1959, issue of PIT AND QUARRY reflects the fact that it is our Annual Review and Preview Number. This contains complete and authoritative reports on 1958 conditions and 1959 prospects for the various nonmetallic minerals industries. The photos show typical scenes in the modern new plants, left to right, of the National Lime and Stone Company, Buckland, Ohio; the Marblehead Lime Company, Low, Utah; the Highspire Sand and Gravel Company, Olmstead, Pa.; and the Medusa Portland Cement Company, Wampum, Pa.

## Monolith Staff Members Promoted to New Positions

Several promotions were announced recently in a release issued by the Monolith Portland Cement Company and the Monolith Portland Midwest Company. The latter operates a plant at Laramie, Wyo., and Monolith Portland has an operation at Monolith, Calif.

H. D. McBride was elected vice-president of both companies. A veteran employee since 1930, he has held the positions of foreman, plant manager, and assistant vice-president.

Bert Oberg succeeds Mr. McBride as assistant vice-president. He obtained his electrical engineering degree in Sweden, and joined Monolith in 1938 as an electrical engineer.

Duncan R. Williams becomes general superintendent. He has been with the company since 1926, having begun his association at the Monolith plant.

Paul L. Schoonover was appointed executive chief engineer. He was formerly chief engineer of the two plants.


**The Line of *MOST RESISTANCE***

**. . . against ABRASION and IMPACT**

**ADMIRO HEAT TREATED ALLOY STEEL**

**. . . cuts costly equipment down time**

COMPLETE FABRICATING FACILITIES

Welding, Rolling, Forming.

Intricate Shapes Cut to Specification

Everyone knows that quarry equipment is in a "tough racket." There's an answer to this—ADMIRO HT Alloy Steel! Shovels, truck beds, dozer pusher blades and other specially exposed parts stay on the job much longer when repaired with ADMIRO Heat Treated Alloy Steel.

Tested-and-proved ADMIRO HT minimizes the destructive effects of impact and wear—keeps repair and maintenance bills at rock-bottom level.

Recommended Applications: Block machine plates, log washer paddles, road scraper pans, hoppers, bins, chutes, core liners. Special uses in Mining, Quarrying, Cement and Aggregate Plants.

*Immediate Service from Completely Stocked Warehouses—Cleveland, Ohio and Dallas, Texas*

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COMPANY_____
ADDRESS_____

***Enter 48 on card, page 165***





***Enter 49 on card, page 165*** →

# FALK Steelflex SPACER COUPLINGS
## save time and money in industrial operations

FALK and STEELFLEX are Registered Trademarks

## Cut disconnect-reconnect time by as much as 50%

The FALK Spacer Coupling is specially designed for quick installation or removal *without disturbing the driving or driven unit*. This feature can save you up to 50% in disconnect-reconnect time when critical equipment—a process pump, for example—needs repair or replacement.

Here's another saving: with the FALK Spacer Coupling, you can quickly realign shafts *without the usual loss of operating temperature!*

And still another: you can remove or reinstall the FALK Spacer as a unit *without draining the lubricant.*

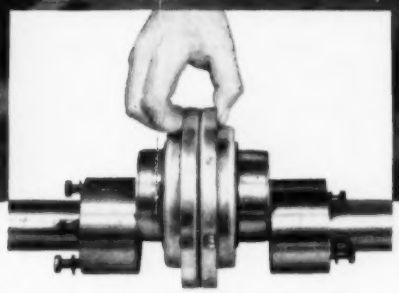
Because of its exclusive grid-groove Steelflex design, the FALK Spacer can accommodate residual misalignment—parallel, angular, or (most important) *both*. Also, it provides torsional resiliency that cushions shock and vibration. Thus it saves wear-and-tear on your connected equipment.

To prove these claims and enjoy these savings, install a FALK Spacer on one application—and see for yourself. Consult your FALK Representative or Authorized Distributor.

**THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN**

*MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS*

**Representatives and Distributors in many principal cities.**

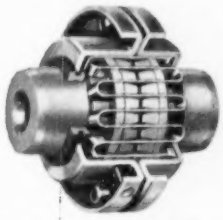


### EASY AND QUICK TO INSTALL, DISCONNECT OR RECONNECT

First, mount shaft hubs to allow proper distance between hubs; then, align driving and driven units.

Second, compress Spacer to fit space between hubs and tighten cap screws to pull spacer hubs into the registered fit.

To disconnect, reverse the second step. No draining of lubricant necessary.



**The heart of the FALK Spacer ...the basic Type F Steelflex**

*Write for Service Manual 4838*

**FALK**

**...a good name in industry**

## Washington News Letter

(*From p.* 11)

placed on large incomes is one of these changes.

Chairman of the House Appropriations Committee will be Representative Clarence Cannon, age 79, of Missouri. He, too, is generally regarded as a conservative who is unlikely to permit the spenders to go "hog-wild."

The House Armed Services Committee is headed by Representative Carl Vinson, age 75, who, like his Senate counterpart, also comes from Georgia. Politically, he and Senator Russell see most of the issues the same way. Representative Vinson may be more sympathetic to Navy or Air Force requests, but if the safety of the nation is in danger, he is no penny-pincher.

The House Agriculture Committee is headed by Representative Harold E. Cooley, age 61, of North Carolina. He, too, like Senator Ellender, is interested in supports for the cotton crop. Under his direction, farmers have very little to fear.

The House leadership, as well, is in both experienced and conservative hands. This should give the President confidence that the Federal Budget will not be abused. On the other hand, should there be a clash between the President and Congress on financial matters, the only place where a clash might occur, it will be no surprise to find the members of Congress rallying behind this leadership, thereby, making the chances for overriding even the Presidential veto very good.

## Labor Developments

(*From page* 13)

with which everyone is concerned is that related to the expiration of the contract in the basic steel industry in July. If past precedent is followed, negotiations are likely to start a month or two earlier, that is, while other labor difficulties in other industries may still be under way. An easy settlement in the steel industry is unlikely because the positions of both the union and the companies appear to be hardening. Right now both sides talk as if a strike were inevitable.

In its convention a few months ago, the Steel Workers Union made it clear that it would seek not only substantial wage increases but also various fringe benefits, such as larger unemployment benefits for steelworkers, better vacations, company-financed hospitals for workers and their familes, and even paid furloughs every few years.

Management, on the other hand, as in earlier situation resulting in strikes, talks loudly and publicly about "holding the line." It is encouraged in this attitude by a general development among large employers to be more willing to take a tough stand publicly. The leader in this development has been the General Electric Company. In the last year, and more particular in recent months, G-E has been joined by other companies which are increasingly giving up their reluctance to take such public positions because of their fear of unfavorable public opinion.

One helpful sign in the steel situation is that David J. McDonald, president of the union, was able, in the last convention, to beat down a good part of the rising opposition to his leadership. With a greater feeling of security, he may be willing to retreat slightly from his extremely aggressive position.

What happens after July will depend, in great part, on the outcome of the steel negotiations. However, at least two industries are scheduled to be renegotiating their labor agreements. These are the meat-packing industry and the railroads. The agreements of the former with the two unions which dominate the field and which have been co-operating recently expire in September.

In November the contracts between the railroad and most of their unions are due to expire. Since the operation of the Railway Labor Act can require long drawn out negotiations and proceedings, it can be expected that the unions will start agitating, demanding, and negotiating long before that date.

Thus, 1959 is unlikely to be an exception to most of the post-war years, in which one labor crisis followed another. The principal difference is that these labor crises have become so familiar that they no longer arouse the intensity of emotion and fear which they did a decade ago.


HAYWARD CLAMSHELL BUCKETS

WORK LONGER,
WORK FASTER,
WEAR LESS!

Designed with rugged, one-piece alloy shells ... wide type, cast manganese steel cutting edges ... smooth shell interior for fast, capacity loads and easy discharge ... manganese bushings ... diagonal truss brace to keep shell in line ... has no side sway or back lash ... *plus many other cost-cutting design features!*

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50 CHURCH STREET, DEP'T P, NEW YORK 7, N. Y.

*Builders of Better Buckets Since 1888*

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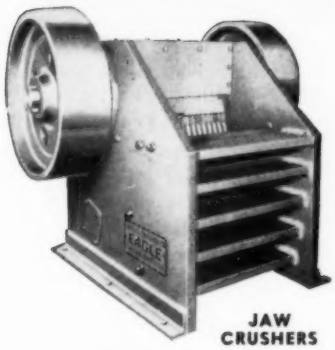
# PRODUCE MORE STONE AND GRAVEL WITH MOBILE

# Eagle Crushers

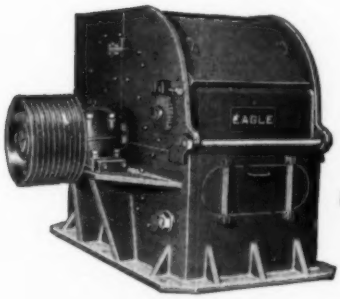
Eagle's new 6600 series portable jaw crusher—featuring low loading hopper—within easy reach of all makes of front end loaders. Variations in basic portable design provide for cage mills, hammermills and roll crushers.



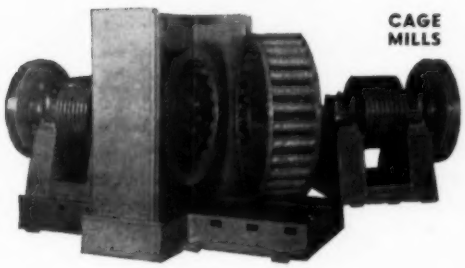

JAW CRUSHERS

Eagle Crushers bear the characteristic marks of the experienced manufacturer—simple design, durable construction, ease of servicing. Eagle originated the one-piece, electrically welded frame—has pioneered in the field of portable, compact, crusher plants like the one above.

The range of models and sizes in the Eagle line meet most every need from primary crushing to super-fines. Expert engineering counsel available to help you with technical problems. Write—describing your needs. Representative will call if you desire.




HAMMER-MILLS



CAGE MILLS

EAGLE CRUSHER CO., Inc.
JAW AND ROLL CRUSHERS, PORTABLE PLANTS, CAGE AND HAMMERMILLS, CONVEYORS, LOADERS
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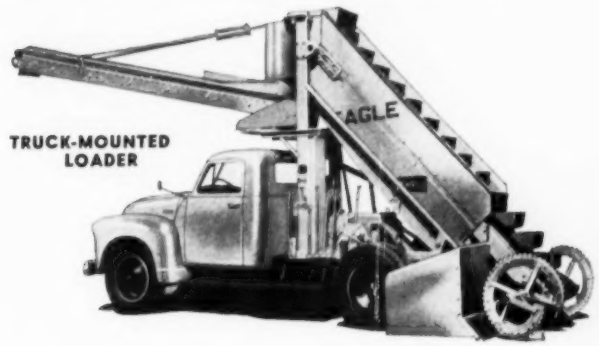


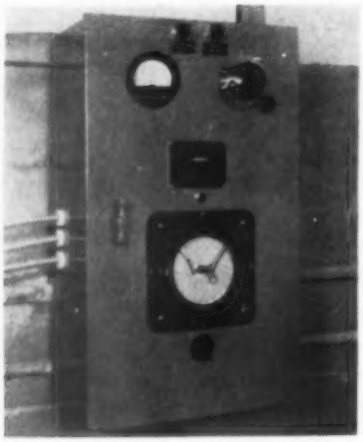

TRUCK-MOUNTED LOADER



Enter 51 on card, page 165

# New Machinery
## *and Equipment*

**For Further Information Use Card on Page 165**



● Four new Electric Ear control and observation units for grinding mills have been developed by the Hardinge Company, Incorporated. The new Electric Ear units provide sound recording features not previously available, making possible both automatic capacity control and continuous observation of grinding mill performance.

The new recording feature indicates operating and shut-down time; bin condition above feeder, if bridging or empty; whether or not operator has changed control settings; and erratic mill operation due to feed size change, moisture variation, or lack of attention.

The new PSR portable sound recorder provides a grinding mill observation unit, without control, using a 24-hour circular chart recorder. The PSFS model is identical to the PSR in function, but employs a 9-day continuous strip-type recorder.

The DAR unit, with a built-in 24-hour circular-chart recorder, provides both observation and grinding mill feed control. The DARS unit performs the same function as the DAR unit, but has a 9-day strip-chart recorder. **(351)**

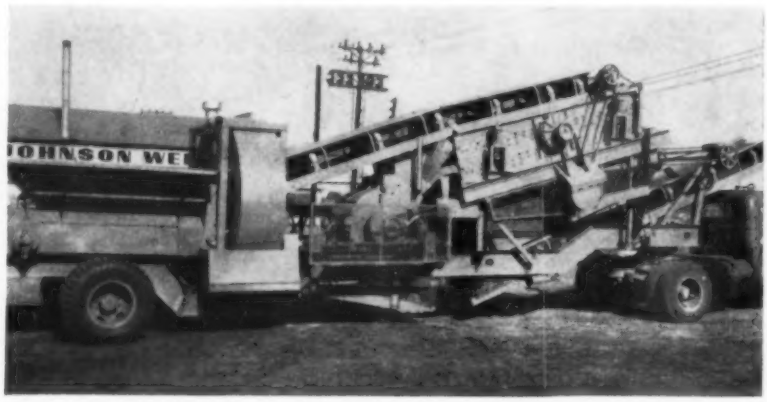
● The Carquake, a hydraulically-powered car shaker which unloads hopper-bottom railroad cars with a minimum of noise, is being manufactured by the Stephens-Adamson Manufacturing Company. The Carquake utilizes hydraulically-powered vibration with speed controlled to match required capacity. From a hydraulic control panel, one man quickly and safely controls the unloading of hopper-bottom railroad cars.

The Carquake is available in two models, the type B stationary mounted Carquake and the type C rail mounted Carquake.

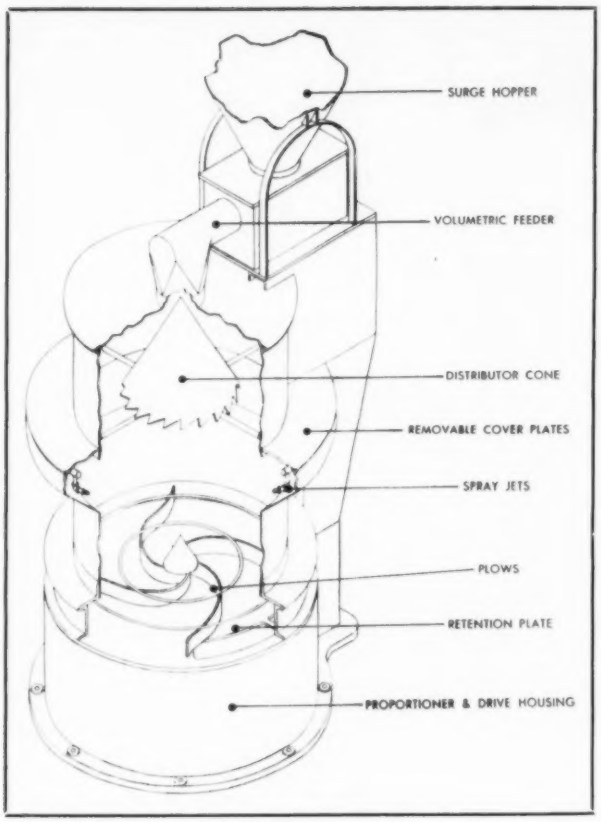
The type B stationary mounted Carquake is designed for application where only slight movement parallel to hopper cars and track is required. The type C differs from type B in that the entire unit is mounted on rails and propelled by means of a hydraulic motor with

speeds up to 50 f.p.m. It can travel any desired distance and unload at any point along its travel.

Because of the clamping feature by which the shaker becomes an integral part of each car structure to which it is attached, noise from bouncing and hammering is eliminated. **(352)**




● The Johnson Welding & Equipment Company, in co-operation with the Lippmann Engineering Works, recently designed and built a portable closed circuit secondary crushing plant. This plant conforms with all legal state requirements in regard to length, width, and height. Because of the legal advantages for transporting over the highway, it relieves the contractor's responsibility for permits and special insurance riders to cover transporting of such equipment. **(353)**

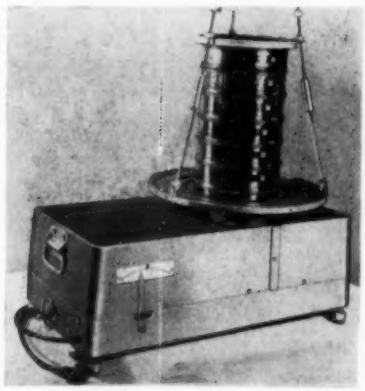



● A new continuous-flow blender developed by The Johnson-March Corporation accurately proportions, mixes, blends, and discharges a wide range of dry materials or blends liquids with solids in precise quantities.

Called Verticone, the blender can be used in the rock crushing and cement industries for mixing dry, pre-mixed concretes and for the control of dust created by the unloading or discharging of crushed limestone or cement clinker from bins and silos. Dry materials are rendered dust-free for further handling or processing. Verticone treatment also suppresses the dust from the unloading of collection bins of cyclones, bag filters, or electrostatic precipitators on dryers, kilns, etc., for dust-free disposal by truck or rail, or return to process.

Materials are fed proportionately into the Verticone via controlled volumetric feeding equipment onto the apex of a cone. The material forms a circular, falling curtain as it leaves the base periphery of the cone. At the base of the cone, spray headers can be provided to disperse any desired liquid into the mixture in any proportions. Mixing blades automatically discharge the blended material.

The complete unit with feeder can be supplied with a common base for location indoors or out. **(354)**



● Fisher Scientific Company offers the Fisher/Wheeler sieve shaker, a quiet running, variable speed unit which will handle all regular A.S.T.M. and other standard sieving tests.

The vibrating sieve table of the shaker gives each particle in the sieve a combined vertical and horizontal motion that keeps the sample uniformly spread over the mesh. The rate of vibration can be varied from 500 to 900 per minute.

The Fisher/Wheeler shaker is supplied with a hold-down ring to fit over a stack of 8-in. sieves. The sieve table is recessed to hold other sizes from 6 to 16 in. in diameter. Three anchor rods hook over the edge of the top sieve or the rim of the hold-down ring, and hold the sieves securely. They can be adjusted to hold stacks from 10 to 18 in. high. **(355)**

● New to the line of high-speed earthmovers manufactured by the South Bend Division, Curtiss-Wright Corporation, is the CW-226 scraper, a two-axle unit with a capacity of 26 cu. yd. struck and 36 cu. yd. heaped. It is powered by a 375 hp. GM 6-110T diesel through an Allison automatic transmission and torque converter.

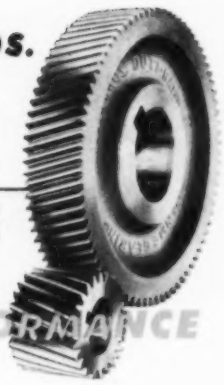
The CW-226 scraper is interchangeable with a 35 ton rear dump unit utilizing a Torqmatic brake for control on steep grades. **(356)**

HERE'S WHY FOOTE BROS.

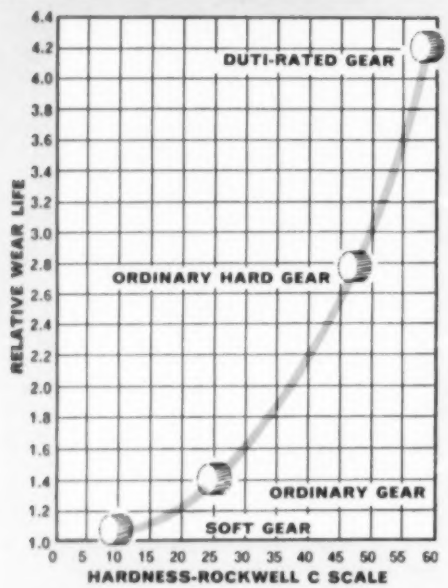
Duti-Rated

LIFETIME GEARING

GIVES BETTER PERFORMANCE
...LONGER LIFE



GEAR PERFORMANCE COMPARISON CHART

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Hardened after cutting. Precision processing permits maximum hardness while holding accuracy within extremely close tolerances.

**ORDINARY HARD GEAR—**
Hardened after hobbing and shaving; hardness limited to maintain reasonable accuracy.

**ORDINARY GEAR—**
Hardened before cutting; hardening limited to maintain machinability.

**SOFT GEAR—**
Low hardness—excessive size required because of low capacity.

LINE-O-POWER Speed Reducer

AND YOU GET
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Gearing in These
Foote Bros. Drives

LINE-O-POWER Right Angle Drive

SHAFT-MOUNTED Drive

LINE-O-MOTOR Drive

Vertical LINE-O-MOUNT Speed Reducer

*Write for SHAFT MOUNTED and LINE-O-POWER Catalogs*
*See how You can get more for Your Drive Dollar!*

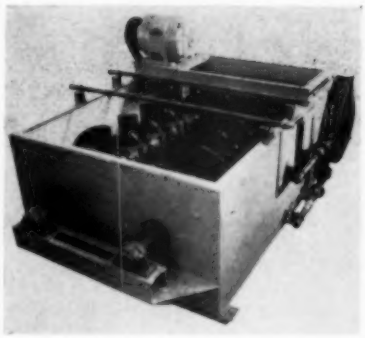
100 YEARS SERVING INDUSTRY 1859-1959

FOOTE BROS.

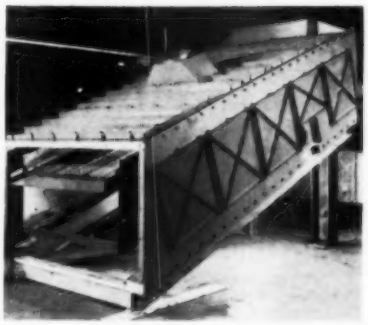
*Better Power Transmission Through Better Gears*

FOOTE BROS. GEAR AND MACHINE CORPORATION
4571 SOUTH WESTERN BOULEVARD • CHICAGO 9, ILLINOIS

Enter 54 on card, page 165



● For plant-mixing of road material at the pit, quarry, or job site, Eagle Iron Works has developed the Eagle material mixer. It consists of a tub with two rows of opposing paddles on tubular steel shafts. The paddles not only mix the materials, but convey them toward a discharge opening at the same time. The mixer can be erected over a bin or mounted at an elevation for discharging directly into trucks. (357)



● A new totally-enclosed Ripl-Flo screen, Model SH, designed for maintaining clean and healthful plants, is offered by the Allis-Chalmers Manufacturing Company.

Equipped with air springs, the standard open type floor mounted screen has a stationary frame enclosure, access side doors and top covers which are held in place with quick opening latches.

Where desired, an exhauster outlet can be provided in the top of the enclosure. The enclosure is bolted to stationary discharge spouting. Provision can also be made for bolting a fines hopper to the stationary supporting frame for dust-free operation.

Single- and double-deck screens of this type in 6 by 16 ft. and 5 by 16 ft. sizes are already being supplied to cement plants. (358)



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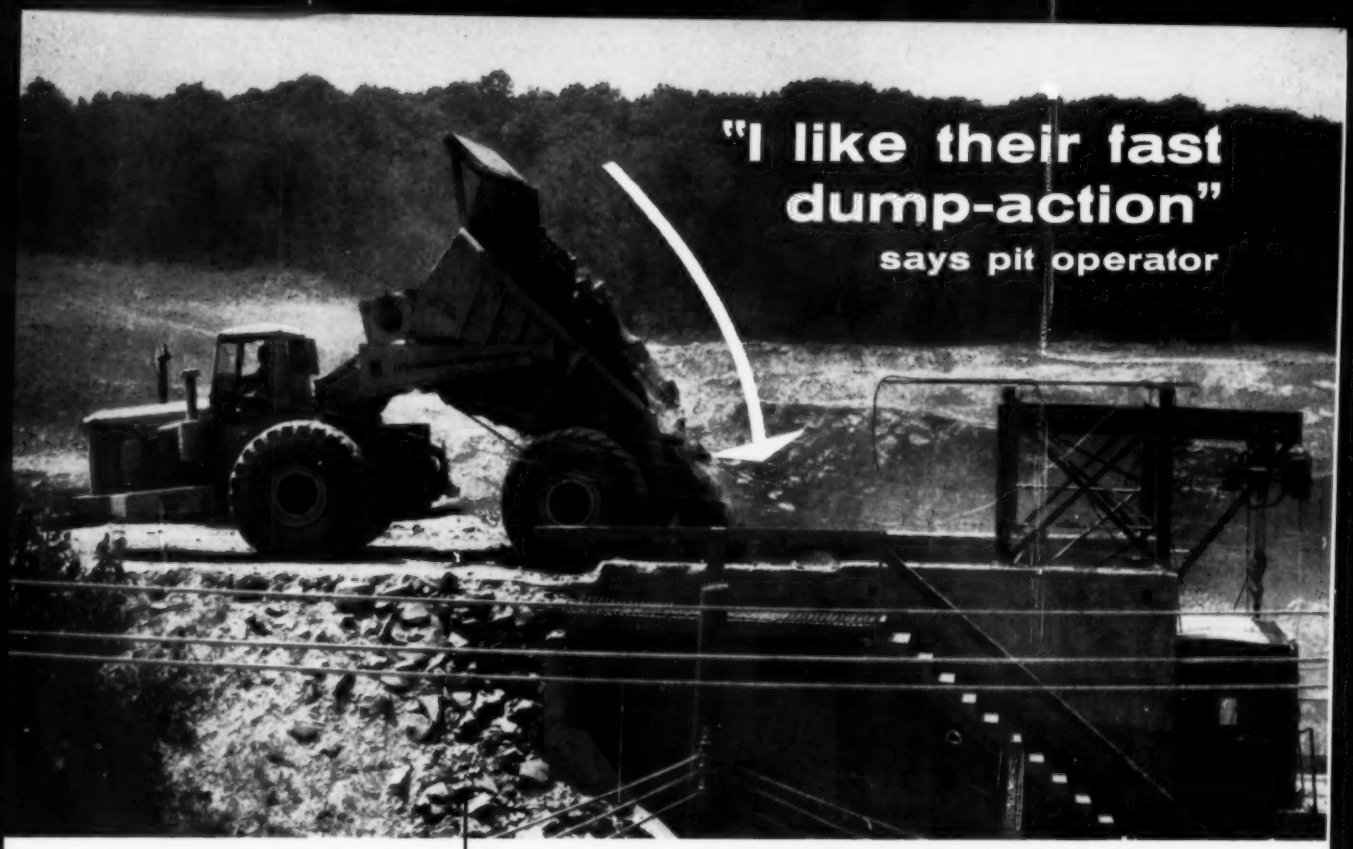


# "I like their fast dump-action" says pit operator

Tournapull operator dumps 22-ton load of rock into grizzly fast, and without spillage, because entire dump is under power-control. At full dump position, edge of bowl is low and behind rear wheels . . . material cannot roll forward to lodge against wheels, nor pile under rear end. Operator Gene Arsenault says, "These Rear-Dumps work and get around where a truck won't. They operate easy . . . we've had no trouble with the electrical system."

Material Service's Rear-Dump is loaded with 22 tons of rock in less than 3 min. Shovel operator does not have to take it slow and easy when loading Tournapull haulers. Unit's all-steel body — with sloping sides, and tri-level bottom—resists shock and crushing damage of loading heavy rock. Low, wide bowl permits dipper to swing-in and out low . . . for faster loading and minimum spillage.

At their East Granby, Connecticut pit, Materials Service, Inc. of Windsor Locks, produces 500,000 tons of crushed hard-trap rock per year. To help maintain production, two LeTourneau-Westinghouse C Tournapull® Rear-Dumps haul 80% of the rock from pit to crusher. Here's how these electric-control pivot-steer haulers perform:

### Haul 22-ton loads up 11% grade

With 8 passes, the 2½-yd. shovel fills L-W Rear-Dumps with 22 tons of rock in 2 min. 51 sec. Units haul 1550′ from pit-floor to grizzly — including 500′ of 11% grade — in 3 min. 24 sec. At plant, Tournapull haulers make a tight U-turn, back up to grizzly, and dump their load in 12 sec. Rear-Dumps then return to shovel in 3 min. 4 sec., completing steep 3100′ cycle in 9 min. 31 sec.

Pleased with the performance of their Tournapull Rear-Dumps, owner Angelo Roncari says, "These units have done all we've expected of them. Best of all, I like their fast dump-action."

### Electric-controls, simplified construction

Tournapull hauler's smooth, quick dump-action, is largely due to its electrical-control system and simplified construction. When operator flips toggle-switch on dash, point-of-action electric-hoist-motor is activated instantly. Body raises quickly to desired angle. There's no delay for hydraulic pressure build-up, no shock-loads — as with gravity dumping. And with only a few places to inspect and lubricate, maintenance time on rugged Rear-Dumps is greatly reduced.

### See Rear-Dumps in action

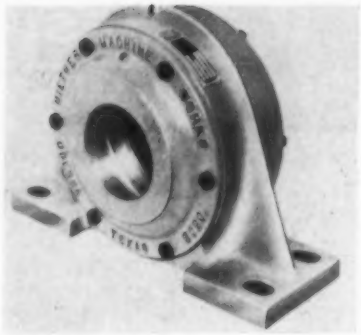
To increase your production and lower maintenance costs, investigate modern Tournapull Rear-Dumps. There are 3 sizes: 11, 22, and 35 tons. Call or write for complete details, or let us show you these speedy haulers in action.

CR-1662-QMJ-1

**LeTOURNEAU-WESTINGHOUSE COMPANY,** PEORIA, ILLINOIS

*A Subsidiary of Westinghouse Air Brake Company*

**Where quality is a habit**



● A new line of pillow blocks, accommodating all series of spherical roller bearings, is offered by the Miether Machine Works. Through interchangeable end caps, 20 basic housings in this line will accommodate 94 separate bearings. Some housings take as many as 8 bearing sizes and 11 shaft diameters.

Installation of a different bearing size is accomplished by fitting new end caps on the housing. End caps and housings are jig drilled, which, according to the manufacturer, makes the pillow blocks more adaptable to a change-over or new installation.

Housings are center-grooved for universal center lubrication, and end caps have a second connection for side lubrication.

The one-piece housing features a reinforcing center rib to withstand severe shock loads. Bases are precision machined on both ends and bottom surfaces to facilitate correct blocking and to retain alignment. Both end caps are removable for easy installation or adjustment. **(359)**

● Two new anti-friction lubricating compositions said to have no melting or dropping point are announced by The Whitmore Manufacturing Company.

Of special use in the earthmoving, mining, quarrying, and processing industries, the new compositions give protection to roller, ball, sleeve bearings, and sliding surfaces on hot bearing applications.

The anti-friction compositions are available in two grades—Anti-Friction Composition No. 1 has light density, and is recommended for high speed, high temperature applications. Anti-Friction Composition No. 2, with its heavier density, is for low speed high temperature applications, or loosely fitted bearings.

Both are available in cartridges for application with lever-type cartridge guns and in regular bulk containers for use with automatic systems, grease cups, pressure systems, or grease guns. **(360)**

● A 25,000-lb. g.v.w. rating and a 218-hp. V-8 engine are features of this Dodge D700 dump truck, one of the new models in the 1959 Dodge truck line. Standard on the D700 is a five-speed synchro transmission with power take-off openings on both sides. A three-speed auxiliary transmission, air brakes, and cast spoke wheels are also available.

The 1959 Dodge trucks feature 6- and 8-cylinder engines with 11 horsepower ratings ranging from 113 to 234. Maximum gross vehicle weights range from 5,100 to 49,000 lb. Gross combination weights reach

65,000 lb. In the heavy-duty field, increased gross vehicle weights for tandems have been made possible by increased capacity rear and front axles and brakes.

Bigger brakes on the ½-ton models provide a total lining area of 192 sq. in., and insure greater stopping ability with reduced pedal effort. **(361)**

This view shows Standard's Model S-E asphalt plant in full operation.

● The Model S-E, a self-erecting portable asphalt plant manufactured in 4,000-, 5,000-, and 6,000-lb. batch capacities, is being introduced by the Standard Steel Corporation.

Parts of the plant, the mixing unit, dryer, dust collector, feeder, storage tanks, hot oil heater, etc., are carried on wheels to the job site by tractor. To erect, the mobile mixing unit is pulled directly under the hoist section. The plant then lifts itself up by its own boot straps through the use of the self-erecting power device, without a crane.

The mobile super-lift dryer, along with the twin portable dust collector, is then wheeled into position and supported on built-in jack legs. The storage tanks, mobile feeder, hot oil heater, generator, etc., are then positioned and the plant is ready for operation. **(362)**

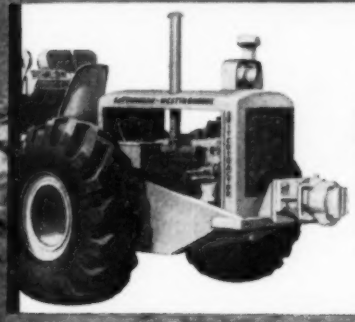
# Why use separate machines and operators on scattered tractor jobs?

Handle your widely-separated pit maintenance and clean-up jobs swiftly and economically with one man and a LeTourneau-Westinghouse Tournatractor®. Rubber-tired tractor speeds to the job under its own power . . . over RR tracks, paved roads, down shot banks, or cross country. There are no delays for load-and-haul to new locations.

L-W tractor gives you better speed at the work area, too. Acceleration is fast, with 210 hp operating through sealed anti-friction drive. Maneuverability is quick and easy. Also, there's no loss of momentum to shift gears, because this tractor's gears are constantly in mesh. Even reverse action is *instant*.

**Handles wide variety of jobs**

You can use Tournatractor to clean around 2 or more shovels . . . to maintain stockpiles, level waste dumps, clean debris off RR tracks . . . to clean benches, handle shallow stripping . . . to tow air-compressors, or pull supply and service wagons. You can even use this speedy, mobile tractor for maintenance and clean-up in one or more adjoining pits.



With standard type E railway coupler — one of ten multi-service Tournatractor attachments available — this speedy, powerful tractor becomes a versatile off-track switcher, as well. Use it to spot and group rail-cars fast. Big tires on SwitchTractor† straddle rails, ride on ballast and tie-ends — deliver *double* the tractive effort of steel-wheeled switchers, rolling on smooth steel rails.

**Biggest tractor value today!**

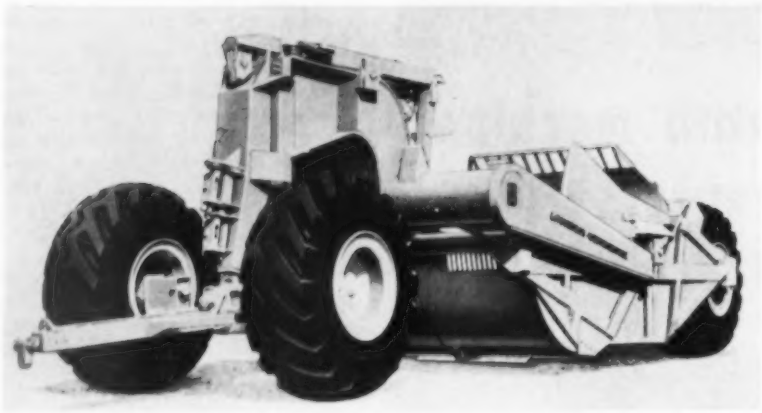
In addition to giving you these plus operating advantages, LeTourneau-Westinghouse Tournatractor *costs less* than a track-type tractor of comparable horsepower. Let us demonstrate this rubber-tired tractor at your pit. Watch it perform under *your* working conditions. You'll find it can handle scattered tractor jobs faster, more efficiently, to help cut pit costs.

†Trademark CT-1865-MQ-1

**LeTOURNEAU-WESTINGHOUSE COMPANY**, PEORIA, ILLINOIS

*A Subsidiary of Westinghouse Air Brake Company*

**Where quality is a habit**



● Struck capacity of the LeTourneau-Westinghouse BT Fullpak scraper has been increased from 18.7 to 21 cu. yd. Heaped capacity of the unit is 27 cu. yd. The largest tractor drawn scraper in the LeT-WesCo line, the BT Fullpak is designed for use with tractors of 150 hp. or more.

The BT Fullpak features a broad, smooth bowl interior free from obstructions. This smooth, clean design minimizes friction and loading resistance. The extremely flat position of the bowl floor—only a 1-deg. tilt when in loading position—allows material to slide in easily without having to travel "up-hill" to get into the bowl. **(363)**

● Convair's new Bin-Vue level indicator and control features an easy-off cover and a fail safe device which will stop or start accessory equipment controlled by the Bin-Vue.

In operation, a 1/100 hp. motor turns a paddle at 9 r.p.m. by means of a torsion spring. The paddle turns continuously; when material makes firm contact with it, the paddle stops. The motor continues to run until the spring activates a limit switch which kicks off the motor and any other equipment connected to the indicator. When the material falls away from the paddle, the torsion spring reactivates the paddle and unwinds from the limit switch, starting the motor and putting the entire unit in operation again. **(364)**

●Developed by the Engine Division, Caterpillar Tractor Company, the portable D3111 (Series H) Twin Arc-Welder replaces the D315 Twin Arc-Welder in the Caterpillar line, providing the same output with smaller dimensions and lower cost.

Each generator has a rating (NEMA) of 300 amps at 40 volts for simultaneous operation of two arcs. For parallel operation, the Twin Arc-Welder is rated at 600 amps, 40 volts. The current range of each generator is 60 to 375 amperes.

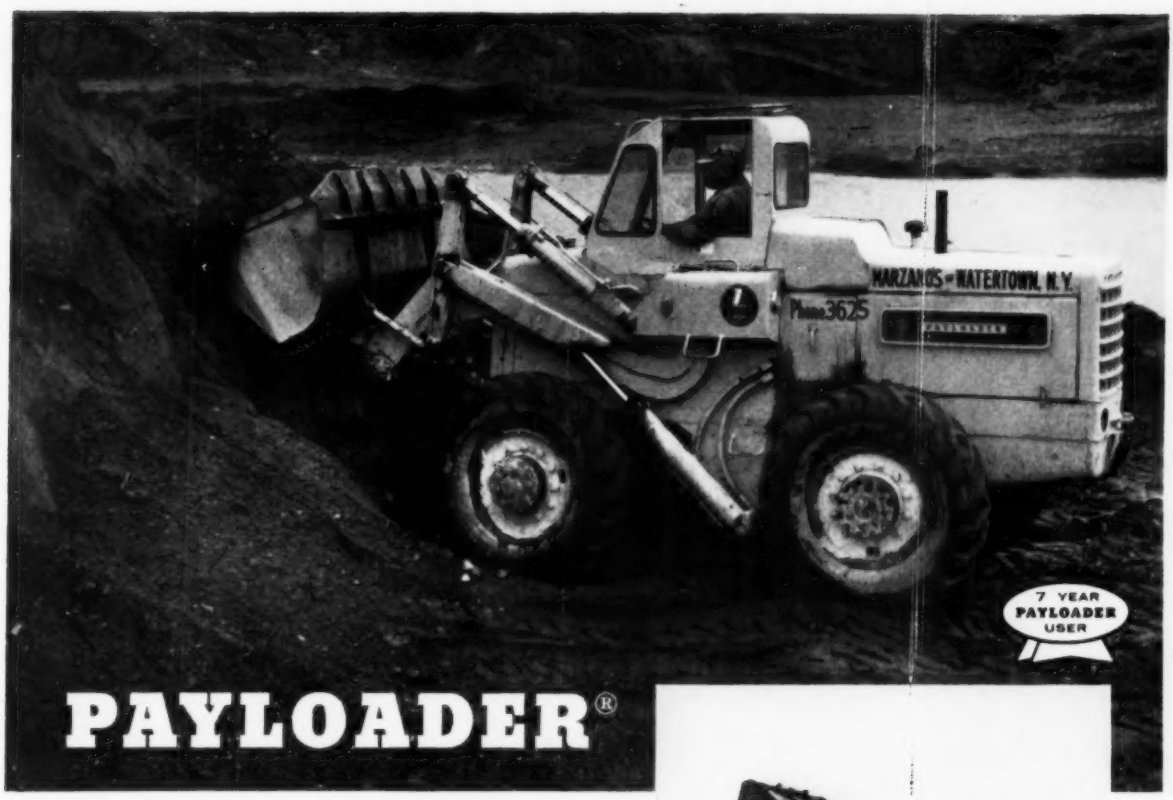
Two sets of generator controls allow welding at different voltages, amperages, and polarity at the same time to permit precision adjustment for any type or size arc throughout the current range.

The standard Twin Arc-Welder includes 24-volt electric starting complete with charging generator and batteries, instrument panel, and base-type fuel tank. The standard unit with skid base is 116 in. long, 31.2 in. wide, and 31 in. high. **(365)**

● Ingersoll-Rand's Drillmaster is now available with a new mounting, which, according to the manufacturer, gives the blast hole unit added ruggedness and increased portability.

Set-up time for the unit, called the TRUCM-3 Drillmaster, requires only a few minutes because the drill tower is raised and lowered by hydraulic power. The drill, which follows its steel right down the hole, has been known to drill 350 ft. of hole during a single 8-hour shift. Further, the drill can be used as a heavy-duty rotary unit when soft, non-abrasive overburden and bedrock must be worked. Air supply for the unit is provided by a 600 c.f.m. Gyro-Flo rotary compressor.

The carrier-mounted Drillmaster can travel at sustained highway speeds and meets legal requirements in all states of the U. S. Its mounting was designed to I-R specifications by the Crane Carrier Corporation. **(366)**




# PAYLOADER®

## ...speeds bank loading 50%

**"Every time our HU 'PAYLOADER' leaves the pit to do other work, our operation is really handicapped . . . we've grown to depend on it for *all our pit work!*"**

That's the reason "PAYLOADER" equipment is a *"must"* at the Marzano sand and gravel operation at Watertown, New York. They used their first Hough (Model HM) for more than 6 years with outstanding dependability. Now, they say, "the easily operated Model HU, with new design breakout action, has speeded-up our bank loading operations 50% or better over the old type Hough machine. It's the most versatile machine ever on the job" . . . besides doing a variety of lugging and maintenance work, the fast-moving "PAYLOADER" moves about one-fourth of their annual production.

Any 4-wheel-drive "PAYLOADER" gives you *more* machine for your dollar investment. Its unique bucket action goes in fast and smooth and brings out heaped loads without excess spillage; power-transfer differentials, plus heavy-duty axles assure reliable traction on mud, gravel, ice and snow and more digging power; power-shift transmission, power steering and 4-wheel power brakes are other outstanding features.

There is a Hough Distributor near you that is ready to prove the superior performance of a "PAYLOADER" tractor-shovel *on your work!* Call him today for a demonstration.

**HOUGH®**

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

A "PAYLOADER" is an operator's machine — handles easily, has good brakes, plenty of power and excellent balance . . . outperforms any other loader in its size class.

**THE FRANK G. HOUGH CO.**
750 Sunnyside Ave., Libertyville, Ill.

**Please send complete data on 4-wheel-drive "PAYLOADER" tractor-shovels:**

☐ **Model HO — 9,000-lb. carry capacity**

☐ **Model H-70 — 7,000-lb. carry capacity**

☐ **Model HU — 5,000-lb. carry capacity**

Name.....

Title.....

Company.....

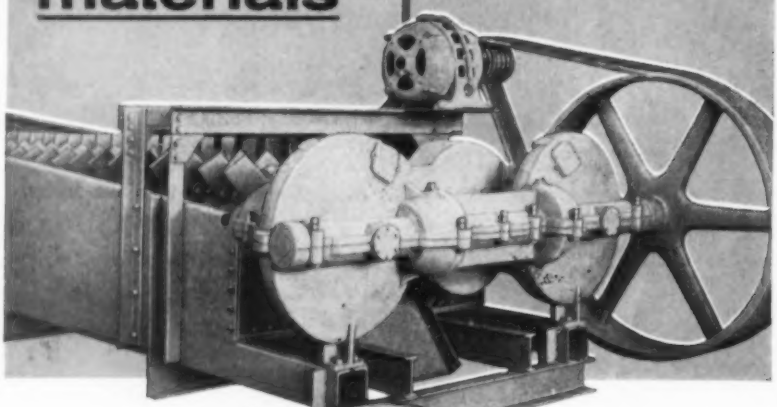
Street.....

City..... State.....

1-9-5

# High Capacities of clean materials

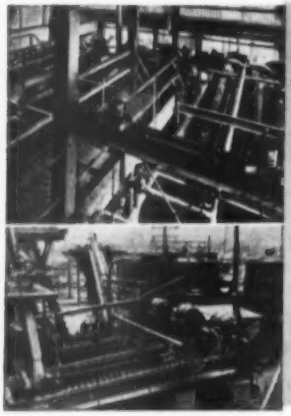
**Developed from the world's first all-steel log washers built by McLanahan & Stone in 1894, these machines produce high tonnages of exceptionally clean materials—removing tough clay, soft rock and refuse with unequalled speed and economy. Available in Heavy-Duty and Mudmaster styles. *Write for Bulletins WLO-1155 and MM-755.***



McLANAHAN SINCE 1835

# LOG WASHERS

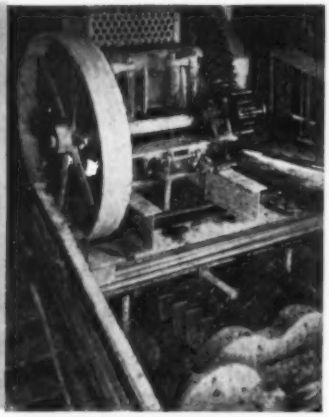
**McLANAHAN & STONE CORPORATION**
253 Wall Street, Hollidaysburg, Pennsylvania



Three 30' McLanahan Logs in world's largest phosphate plant.

McLanahan Logs washing iron ore received from McLanahan Rockmaster Crusher.

Three 35' Logs cleaning 400 to 500 tons of sand and gravel per hour.



*Enter 60 on card, page 165*

● Keystone No. 29 is a special high-tenacity grease developed by the Keystone Lubricating Company for use on open gears subject to strenuous service. It provides a highly adhesive lubricating film that reduces wear, increases gear life, and lowers power consumption. It retains its adhesiveness even under severe dust conditions. Having a wide operating temperature range, it can be applied without heating in cold weather and will not melt, drip, or dry out at high temperatures.

High pressures do not affect Keystone No. 29 lubricant. It stands up under heavy loads, resists squeezing out, and prevents metal-to-metal contact. In addition, it is acid- and alkali-resistant and repells water.

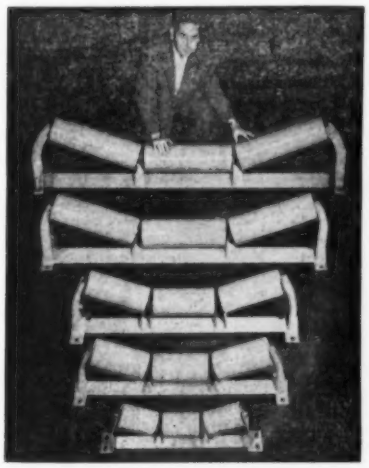
Supplied in cartridge form, No. 29 can be applied quickly and easily by gun applicator. **(367)**

● Additions to the aluminum dump body fleet available from the Daybrook Hydraulic Division, Young Spring & Wire Corporation, include six body-hoist units for transporting and dumping aggregates now in operation in the southwest area. Aluminum construction, general design,

and load weight distribution contribute to a bonus payload with each truck trip. Daybrook has built aluminum body units with capacities up to 22 tons with a bonus payload approximating 6,000 lb.

The dump body design incorporates many features of the Daybrook contractor-style body, including box-type side braces and safety-style sloping running boards. Body side sheets are formed with a full length "V" crimp for added strength and rigidity.

The accompanying photo shows a truck unit equipped with a Daybrook series 3C telescopic hoist, which is engineered for weight savings, long life, and minimum maintenance. (368)



● Link-Belt Company offers an expanded line of belt conveyor idlers available in five series and in widths ranging from 14 in. to 84 in. The new line consists of more than 630 types and sizes, and increases the number of idler variations the company manufactures from 38 to 64.

The new series offer a wide range of idler types. In addition to flat, 20 deg. and 45 deg. troughed idlers, other types include rubber cushioned idlers for use at loading points, positive action and actuating disc training idlers, and variable troughed idlers.

All five of the new idler series feature inverted angle bases. On all idlers, removable steel retainer clips at each bracket hold rolls in position. All idlers are filled with grease at the factory and can be installed without further lubrication. (369)


PROFITABLE TONNAGES

of cleaner, drier product

More effective performance in a broad range of operating conditions . . . heavier construction for longer service—those fundamentals make McLanahan Single or Double Screw Washers your soundest buy. *Write for New Bulletin No. SW-58.*

SCREW WASHERS

McLANAHAN & STONE CORPORATION

253 Wall Street Hollidaysburg, Pennsylvania

*Enter 61 on card, page 165*

## THE MAN WITH THE ★ MULTIWALL PLAN

**UNION**
**PACKAGING SPECIALIST**
**"WHITEY" CAMPBELL**

# shows packer how to pocket $85,000

$85,000! That's the *annual* dollar savings one user of Multiwall bags will enjoy as a result of a recent Union packaging survey.

The survey, made by Union Packaging Specialist "Whitey" Campbell, showed that: (1) $57,000 a year could be saved simply by switching the company's 3-ply domestic baler bags to 2-ply's. (2) reinforced sewing construction on 100-lb. packages would save 20# basis weight per bag . . . and additional thousands of dollars in costs depending on the number of bags used.

**Union Multiwall Recommendations are based on this 5-Star Packaging Efficiency Plan**

- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

These were the major recommendations made and put into effect through Union's 5-Star Packaging Efficiency Plan. Total savings are expected to amount to more than $85,000 when all improvements are completed. How much could this plan save you?

**Better Multiwall performance through better planning**

union camp

UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

**UNION MULTIWALL BAGS**
UNION BAG-CAMP PAPER CORPORATION
233 BROADWAY, NEW YORK 7, N. Y.

● Sinclair starting fluid for gasoline and diesel engines is now available from Sinclair Refining Company in Aerosol containers. A special gas propellent is used to assure maximum positive discharge pressure at below freezing temperatures.

Sinclair starting fluid is designed to trigger ignition and maintain combustion of regular fuels to accelerate starting at temperatures as low as —65 deg. F. **(370)**

● This new heavy-duty rock body was designed by the Galion Allsteel Body Company for off-the-highway use in conditions requiring an oversized 16 x 9 ft. body. Galion engineers designed a special double-acting telescopic hoist to lift the 20 cu. yd. load and also to lower the body from its extreme 70 deg. dumping angle. The unusually high dumping angle is necessary to scour the load from the body and provide quick unloading.

Mounted on an Autocar chassis, the body is constructed of 8 gauge steel shell and has a 2 in. oak cushion under the ¼ in. steel batterplate. The triple floor construction enables the body to withstand the severe pounding of rock dropped from a power shovel. **(371)**


**BROWNHOIST BUILDS BETTER BUCKETS**

—for less money DIRECT FROM FACTORY TO YOU

CLAMSHELL BUCKET

LOCOMOTIVE CRANE

COAL-ORE BRIDGE

ORE UNLOADER

191

ROPE REEVE, POWER WHEEL AND LINK TYPE

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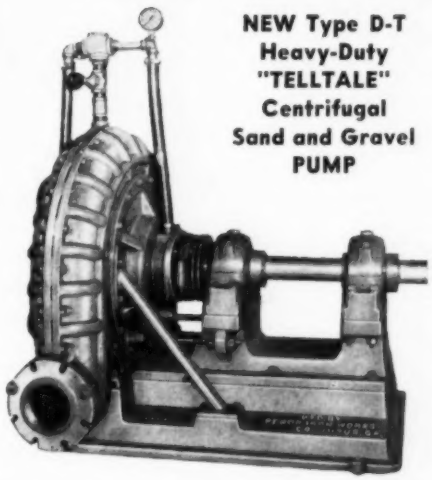
**INDUSTRIAL BROWNHOIST CORPORATION**

BAY CITY, MICHIGAN

*Enter 63-A on card, page 165*

**LOOKING FOR A BETTER SAND AND GRAVEL PUMP?**



**NEW Type D-T Heavy-Duty "TELLTALE" Centrifugal Sand and Gravel PUMP**

Have a look at the Type D-T Heavy Duty "Telltale" Pump. Its production is the talk of the industry wherever it has been put to work. Likewise, what it can take under what would be heavy overloading for an ordinary pump.

**AS LOW IN DOWNTIME AS IT IS HIGH IN PRODUCTION**

"Telltale" is the only pump that warns when it's time to reline. Air sucked through periphery ports causes pump to lose its prime. Pumping stops. Water leaking through the ports signals that the shell liner and the surrounding belt of packing have worn through.

Available with either tough semi-steel or best-in-the-long-run Ni-Hard wearing parts in 4", 6", 8", 6 x 8" suction and 8 x 10" suction. Now available also in either alloy, 45 and 90° extra-heavy long-radius flanged elbows. Write for Type D-T Heavy-Duty folder and prices.

**PEKOR IRON WORKS, INC.**

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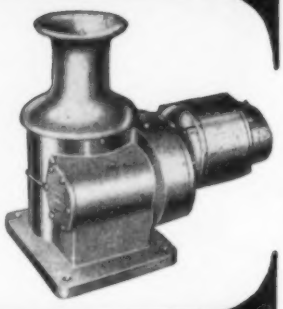
# Webster CAR PULLERS

## For Quick, Economical Spotting

One-man, push-button control. Always ready, always safe. The capstans on WEBSTER Car Pullers are designed to give long life to the ropes, and provide the necessary traction for pulling the load. The high-torque, hoist-type, weatherproof motor is an integral part of the unit. Two sizes of 5,000 or 10,000 lbs. rope pull at 40 ft. per min. WEBSTER Drum-Type Car Pullers also available in sizes from 7½ up to 50 hp. Write for literature.



# Webster IDLERS

## Job-Designed for Top Performance

Perfect and permanent roll alignment, economical operation, and minimum maintenance are built-in characteristics of WEBSTER Idlers. The balanced steel rolls have rounded edges which protect the belt and securely lock in the malleable iron roll ends. Timken tapered roller bearings are oversize to meet overloading and constant operation. Labyrinth seals of metal and felt keep grease in and dirt out. All parts interchangeable. WEBSTER Idlers will help you keep material handling costs down. Write for literature.

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## Quality-Built for Long Service

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**WEBSTER MANUFACTURING, INC.**
Dept. Q-19 TIFFIN, OHIO
*Offices in All Principal Cities*

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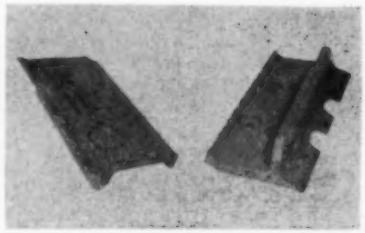
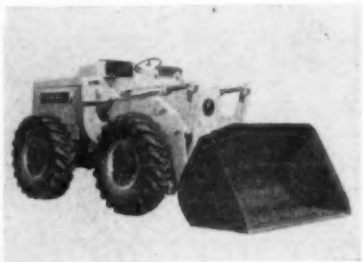


● A complete line of heavy-duty, wear-resistant grouser plates for all standard model crawler tractors is available from Kensington Steel, Division of Poor & Company. The grouser plates are available in regular, flat, and semi-grouser types, and are completely intercrangeable with those originally mounted on the tractor.

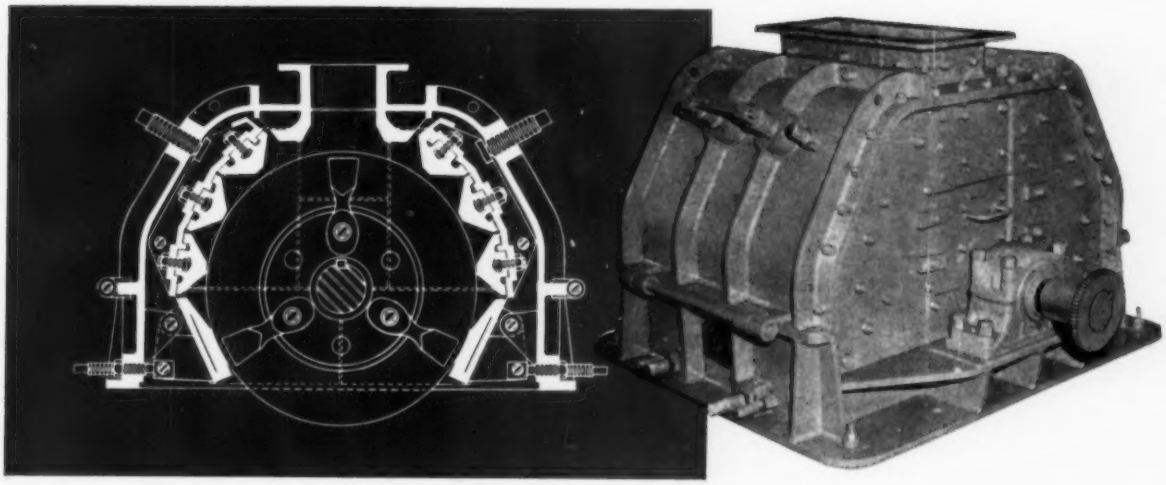
Cast of Supermang, a specially alloyed manganese steel, these plates reportedly have an initial hardness far in excess of regular manganese steel and can develop an even greater degree of surface hardness in areas of severe wear and abrasion. **(372)**



○ The Frank G. Hough Co. has introduced a new rubber-tired, four-wheel-drive model, the H-90 Payloader, which replaces the former HO model. The unit has a load carry capacity of 9,000 lb. at average travel speeds. Both gas and diesel power units are offered.

Buckets to handle materials of various weights within the recommended carry capacity of 9,000 lb. are available in sizes from 1½ to 5 cu. yd.

The H-90 Payloader has a breakout force of 21,000 lbs. and a bucket tipback of 44 deg. at ground level. Like its predecessor, the H-90 has torque-converter drive, power-shift transmission and new heavy-duty planetary axles. Power-transfer differentials automatically transfer up to 24 percent more torque to the wheels with the best footing under slippery conditions. **(373)**

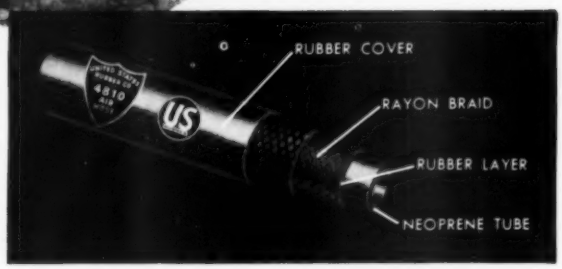


# SUCH COMPLETE ADJUSTABILITY HAS NEVER BEFORE BEEN AVAILABLE IN A CRUSHER

Pictured above is one of several types of Pennsylvania Reversible Impactors. The breaker block areas on both sides of the mill are adjustable, permitting the operator to move the blocks towards, or away from, the hammer circle. The upper blocks on each side of the rotor can be adjusted independently of the lower blocks, and vice versa. This complete adjustability gives you option of product size, within a reasonable range, and assures uniformity and constant tonnage of product during the entire life of the hammers and blocks—a money saving feature that is very desirable. For complete information on the entire line of Pennsylvania Reversible Impactors, send for bulletin 6018. Pennsylvania Crusher Division, Bath Iron Works Corporation, West Chester, Pennsylvania.

**Pennsylvania CRUSHERS**

PE-307




# Where men and hose flex their muscles

Here's the hose that's as rugged as the men who use it. On the really tough construction jobs—where tight quarters, abrasive terrain and high working pressures take their toll of ordinary air hose—mandrel-made, wrapped-finish, U.S. 4810 Air Hose stands up to use *and abuse.*

Yet, despite its great strength, 4810 is no muscle-bound hose. "U.S." engineering has made it easier to handle, readily flexible, able to take higher working pressures—*and less expensive*—than the conventional air hose you might be using. It's one of a complete line of U.S. Rubber construction hose.

• • •

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**Mechanical Goods Division**

**United States Rubber**

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# Cement Leads Nonmetals to New Record— Further Increases Seen for 1959

THE nonmetallic mineral (Pit and Quarry) industries, collectively, apparently had another record year in 1958, but only by a small margin. There was a sharp increase in portland cement shipments, and production of aggregates was up slightly; but other nonmetals apparently about held their own. Prospects are for a substantial increase in the volume of construction in 1959, which is expected to carry the cement and aggregates industries to new record levels. Other nonmetals, more affected by the expected general business increase, should collectively reach a new high.

This information is obtained from the Review and Forecast Section of this January, 1959 issue, in which we present to our readers the latest and most complete information available on conditions in the nonmetallic minerals industries, and on prospects for the future. We have compiled this information from government data and other sources and from answers to questionnaires sent to thousands of producers in this field.

According to the best information available, the dollar volume of new construction in 1958 was about $48,800,000,000, slightly over the 1957 record. An estimated $18,000,000,000 was spent for maintenance and repair, making a total of $66,800,000,000. Because of increased construction costs, however, it is doubtful that a new record was set in actual construction volume.

PORTLAND cement had about a 7 percent increase in shipments, which offset the sharp drop in 1957 from the all-time record of 1956. Bureau of Mines figures for the first 11 months of 1958, and estimates for the remainder of the year show that shipments were about 308,000,000 bbl. Sand and gravel output in 1958 is estimated as at least 635,000,000 tons, about 1.2 percent over the record 627,000,000-ton output of 1957. This includes both commercial and non-commercial production and industrial sand. Crushed stone production in 1958 was about 450,000,000 tons, an increase of about 3 percent over the record 439,000,000 tons produced in 1957. These figures include both commercial and non-commercial production, as well as agstone, but not the stone used in cement and lime manufacture. Lime, gypsum and fluorspar may have passed 1957 totals; but most others followed the steel production and general business curves, which were down early in 1958 but began climbing late in the year.

ALL authorities agree that there will be another increase in dollar volume of new construction in 1959, estimates averaging about 7 percent. This indicates a record volume of $52,300,000,000 for new construction and $18,000,000,000 for maintenance and repair, making a total of about $70,300,000,000.

These construction estimates, together with producers' reports, indicate modest increases in the demand for cement and aggregates in 1959. Cement shipments are expected to climb 3 percent to a new record of about 317,000,000 bbl. Crushed stone and sand and gravel production should be up 5 and 2 percent, for new records of 475,000,000 and 650,000,000 tons, respectively. Many of the other nonmetals should show substantial gains over 1958 figures, and a moderate increase, collectively. As a result, the Pit and Quarry industries should have another record year.

Walter E. Trauffer

# *See the NEW* McNally Pittsburg "SHORTY" Belt Conveyor

## *—that increases belt life, slashes maintenance cost!*

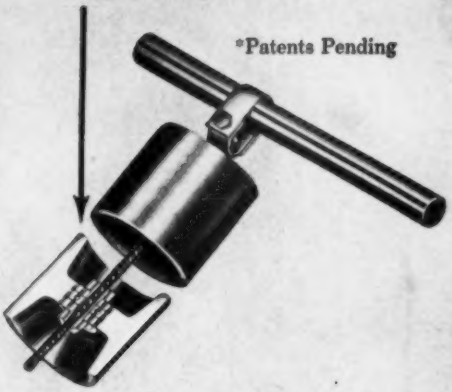
**The "Shorty" unit is only 2 feet high!**

The new "Shorty" underground conveyor featuring the new McNally Pittsburg Cradle Idler is ideally suited for use in limited working areas. Vertical supports are only 2 feet high. For extremely low clearance installations these conveyors can be made with 3″ diameter rollers (instead of the standard 5″), and the average over-all height can be as little as 17″ for a 36″ belt, using a 30° deep trough idler construction.

**For "Do-it-yourself" construction,** the H-frames and stringers (which may be either wire rope or pipe stringers) are shipped disassembled and may be assembled in the field to fit any conveyor length necessary. It is only necessary to cut the stringers to the desired length, attach the Cradle Idlers and H-frames, and your conveyors are ready for operation.

**Exclusive NEW Patented Cradle Idler***

*Patents Pending



The secret of the dramatically improved performance and lower maintenance cost of this new heavy duty conveyor is the *true catenary suspension* of the Cradle Idlers. Since the rollers *rotate* on the steel rope, dangerous "loping and harmonics" cannot develop. The 5″ rubber rollers, assembled on precision ground ball bearings, are prelubricated, lifetime sealed.

- Increased belt life—because full belt support is maintained under all conditions
- No creasing or cutting of belt
- Minimum maintenance

McNally Pittsburg Mfg. Corp., Pittsburg, Kansas

☐ Please send information on the new McNally Pittsburg belt conveyor.

☐ Have Sales Engineer call for further consultation.

Name_____ Title_____

Company_____

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P

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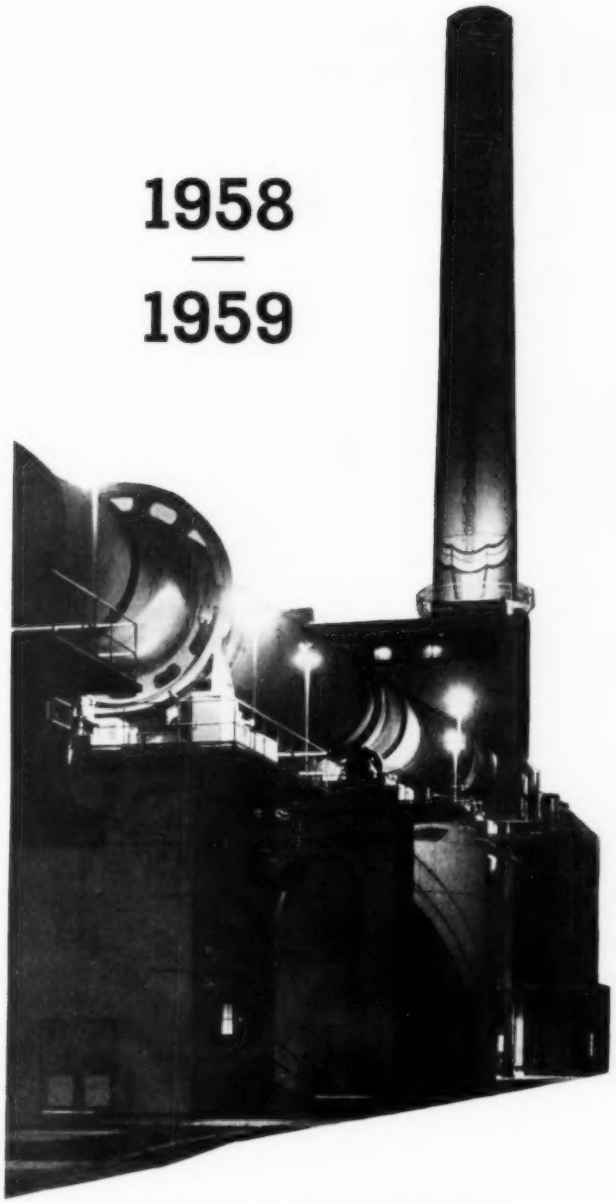
# 1958 — 1959



# REVIEW and FORECAST

## OF THE NONMETALLIC MINERALS INDUSTRIES

**In 1958 there was a general increase in the demand for Pit and Quarry materials which apparently more than offset the moderate losses in 1957, setting a new all-time record. Portland cement shipments were up sharply, aggregates showed slight gains, and many of the other nonmetals at least held their own.**

**Prospects for 1959 are excellent. Construction volume is expected to continue upward, and the Federal Highway Program is getting into full swing. Cement and aggregates will set new records, and the other Pit and Quarry industries as a whole should show some gain.**

*PIT AND QUARRY REPORTS:*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# Construction Review and Forecast

## Bolsters U.S. economy—
## New high expected in '59

By JAMES G. KOSTKA

THIS is the third time in the last decade that the construction industry has helped stem the tide of a faltering national economy and has dramatically assisted in leading the way out of a business recession. Similar feats were accomplished by the construction industry in the recessions of 1949 and 1954.

No other single industry in the United States has such a direct bearing on our economy. Its operations are of great importance to producers of materials such as sand and gravel, crushed stone, cement, lime, gypsum, asphalt, steel, aluminum, and many others too numerous to mention. Producers of equipment and supplies, transportation, and the nation's labor force also find that the construction industry is an exceedingly important one. This is borne out by the fact that this industry currently represents about 15 percent of the gross national product. Keeping this in mind, it is easy to see why construction means so much to our national economy.

Although total new construction put in place did not quite reach the $49,600,000,000 predicted for 1958, it did rise to $48,800,000,000, an increase of 1 percent over the previous year. By recording this increase, 1958 became the 13th consecutive year to establish a new record in construction dollar value.

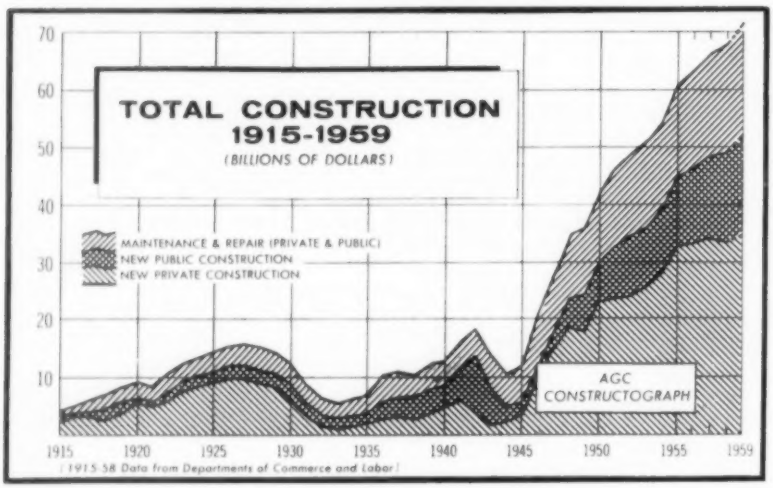
The construction industry is not expected to rest on its past laurels, however. Government predictions are that 1959 new construction will reach a record peak of $52,300,000,000, a whopping 7 percent above 1958's record total. There is another reason why the estimated total construction for 1959 is significant, it represents the first time in our country's history that new construction is expected to climb above the $50,000,000,000-mark.

In all probability, the 1958 physical volume of construction remained about the same as 1957's, but the physical volume for 1959 should rise about 3.5 percent.

In addition to the new construction, another $18,000,000,000 is expected to be spent for maintenance and repairs in 1959, about the same amount as that spent in 1958. Combining this figure with the new construction total gives us a staggering figure of $70,300,000,000 for all construction. If this volume is reached, and there is no reason at the present time to believe it won't be, it will be the first time that all construction has pushed above the $70,000,000,000-level.

Breaking new construction into private and public construction groups, public construction, the smaller of the two groups, is expected to provide the biggest gains in 1959. Every one of the segments making up public construction is expected to register a gain during the coming year. Public service enterprises are slated for the highest percent of rise, with an increase of 53 percent, representing a jump from $450,000,000 in 1958 to $690,000,000 in 1959. However, lower in percent of increase than public service construction, but highest in dollar volume of any public construction is the expenditure for highways, which is expected to increase 16 percent. Highway constructtion costs amounted to about $5,350,000,000 in 1958 and should reach at least $6,000,000,000 in 1959. Some sources cited, other than the government, indicate that highway building will cost around

Construction growth has been very rapid during the post-war years, propelled by the enormous needs of an expanding population and economy which were compounded by underbuilding of community facilities during the depression and war years.



$6,500,000,000 by the end of the current year.

All public construction groups combined produced $15,000,000,000 worth of construction in 1958. The same group is expected to increase its volume to $17,100,000,000 in 1959, a 14 percent jump.

It is expected that private construction, as a combined group, will rise from $33,800,000,000 in 1958 to an estimated $35,200,000,000 in 1959, or an increase of 4 percent. Keeping private construction on the plus side in 1959, will be the residential dwelling unit segment with an anticipated increase of $1,700,00,000 over the 1958 total of $13,300,000,000. This represents an increase of 13 percent and is the highest expected by an individual division in this group.

Unlike public construction, declines are predicted for several of private construction's divisions during the present year. Two that are expected to decline are nonresidential and public utility building. Industrial nonresidential will probably fall from $2,460,000,000 in 1958 to about $2,080,000,000 in 1959, a drop of 15 percent, according to current expectations. Public utility construction is expected to fall from $5,575,000,000 in 1958 to $5,400,000,000 in 1959. This represents an anticipated drop of 3 percent. However, in spite of the fact that some declines are expected in certain types of construction, the overall picture for 1959 looks excellent.

## PRIVATE CONSTRUCTION

**Residential Building** Making up this division are the following types of construction: new dwelling units, additions and alterations, and nonhousekeeping. Nonfarm buildings are not included in this group.

Private residential construction is by far the largest of any of the construction divisions. In 1958 it represented 36.2 percent of all new construction; in 1959 it is expected to represent an even larger slice by being responsible for about 37.2 percent. New dwelling units accounted for approximately $13,300,000,000 of the private residential construction expenditure in 1958, a year when there were an estimated 1,070,000 housing starts. The government feels even more optimistic about 1959, with a forecast of 1,150,000 starts which will cost around $15,000,000,000.

The expected high dollar volume of expenditures for new private housing in 1959 reflects a continuation of work on the unusually large number of units started late in 1958. It is anticipated also that, in the early months of 1959, the seasonally adjusted annual rate of private housing will continue at a relatively high level, and will taper off thereafter. Thus, the rise in expenditures for private housing is likely to be substantially greater than would be indicated by the moderate increase expected in the dwelling unit starts.

Also reflected in the increase in new private housing outlays is an expected rise in the average per unit cost. The apartment boom of the last two years appears to be lessening, so that the proportion of such units (which are smaller and cost less, on the average, than single-family houses) is likely to decline in 1959. Moreover, under the less favorable mortgage terms anticipated for 1959, and as builders use up the relatively large volume of 1958 commitments for moderate-cost houses with government-backed mortgages, the proportion of higher-priced single-family houses may be expected to rise.

Additions and alterations of private residential construction should climb about 3 percent from its total of $3,780,000,000 in 1958 to $3,880,000,000 in 1959. A market of this type is a rather nebulous one because it cannot be checked as accurately as new construction.

**New Construction Put in Place in Continental United States 1957, 1958, and Outlook for 1959[1]**

| Type of construction | Value (in Millions) 1957 | 1958[2] | 1959 | Percent Change 1957-58 | 1958-59 |
|---|---|---|---|---|---|
| TOTAL NEW CONSTRUCTION | $48,115 | $48,800 | $52,300 | + 1 | + 7 |
| PRIVATE CONSTRUCTION | 33,988 | 33,800 | 35,200 | — 1 | + 4 |
| Residential buildings (nonfarm) | 17,019 | 17,700 | 19,500 | + 4 | +10 |
| New dwelling units | 12,615 | 13,300 | 15,000 | + 5 | +13 |
| Additions and alterations | 3,903 | 3,780 | 3,880 | — 3 | + 3 |
| Nonhousekeeping | 501 | 620 | 620 | +24 | 0 |
| Nonresidential buildings | 9,556 | 8,730 | 8,500 | — 9 | — 3 |
| Industrial | 3,557 | 2,460 | 2,080 | —31 | —15 |
| Commercial | 3,564 | 3,550 | 3,630 | [3] | + 2 |
| Office buildings and warehouses | 1,893 | 1,980 | 1,900 | + 5 | — 4 |
| Stores, restaurants, and garages | 1,671 | 1,570 | 1,730 | — 6 | +10 |
| Other nonresidential buildings | 2,435 | 2,720 | 2,790 | +12 | + 3 |
| Religious | 868 | 865 | 950 | [3] | +10 |
| Educational | 525 | 565 | 600 | + 8 | + 6 |
| Hospital and institutional | 525 | 605 | 600 | +15 | — 1 |
| Social and recreational | 311 | 425 | 420 | +37 | — 1 |
| Miscellaneous | 206 | 260 | 220 | +26 | —15 |
| Farm construction | 1,590 | 1,600 | 1,600 | + 1 | 0 |
| Public utilities | 5,624 | 5,575 | 5,400 | — 1 | — 3 |
| Railroad | 406 | 300 | 325 | —26 | + 8 |
| Telephone and telegraph | 1,068 | 900 | 950 | —16 | + 6 |
| Electric light and power | 2,100 | 2,250 | 2,100 | + 7 | — 7 |
| Gas | 1,650 | 1,750 | 1,625 | + 6 | — 7 |
| Other public utilities | 400 | 375 | 400 | — 6 | + 7 |
| All other private | 199 | 195 | 200 | — 2 | + 3 |
| PUBLIC CONSTRUCTION | 14,127 | 15,000 | 17,100 | + 6 | +14 |
| Residential buildings | 506 | 830 | 1,125 | +64 | +36 |
| Nonresidential buildings | 4,503 | 4,625 | 5,075 | + 3 | +10 |
| Industrial | 473 | 370 | 375 | —22 | + 1 |
| Educational | 2,825 | 2,880 | 3,000 | + 2 | + 4 |
| Hospital and institutional | 350 | 400 | 475 | +14 | +19 |
| Administrative and service | 439 | 530 | 750 | +21 | +42 |
| Other nonresidential buildings | 416 | 445 | 475 | + 7 | + 7 |
| Military facilities | 1,322 | 1,210 | 1,400 | — 8 | +16 |
| Highways | 4,971 | 5,350 | 6,000 | + 8 | +12 |
| Sewer and water systems | 1,344 | 1,390 | 1,520 | + 3 | + 9 |
| Sewer | 781 | 840 | 950 | + 8 | +13 |
| Water | 563 | 550 | 570 | — 2 | + 4 |
| Public service enterprises | 393 | 450 | 690 | +15 | +53 |
| Conservation and development | 971 | 1,000 | 1,080 | + 3 | + 8 |
| All other public | 117 | 145 | 210 | +24 | +45 |

[1] Joint estimates of the Department of Labor and the Department of Commerce
[2] Last 2 months estimated
[3] Change of less than 0.5 percent

Reinforced concrete silos, one form of commercial construction, being erected for the Central Soya Company of Decatur, Ind. A total of 12 silos 80 ft. in diameter and 110 ft. high were built, requiring 5,600 cu. yd. of concrete.

Many of the smaller jobs are done by do-it-yourself home owners; therefore, considerably more estimating has to be done in forecasting trends in additions and alterations. This market should not be confused with that for maintenance and repair, which covers the entire construction industry and amounts to about $18,000,000,000 a year.

Nonhousekeeping construction, which includes hotels, dormitories, and such structures as tourist courts, cabins, and vacation cottages, is expected to maintain the same level in 1959 as it reached in 1958, when it hit $620,000,000.

**Nonresidential Buildings** Included in this broad classification is industrial, commercial (office buildings, warehouses, stores, restaurants, and garages), and other nonresidential construction—religious, educational, hospital and institutional, social and recreational, and miscellaneous. As a group, this type of construction will amount to around $8,500,000,000 in 1959, a drop of 3 percent below the previous year, which totaled $8,730,000,000.

Industrial construction is probably the weakest spot in the whole picture. The declining demand for this type of building is expected to continue through 1959, when its volume should be about $2,080,000,000. This is 15 percent lower than the year before, but it does not indicate a slackening of the downward trend because the 1958 total was 31 percent below 1957.

As confidence is re-established in our present economy, sales volumes will climb. New plants will have to be built, and some old plants will have to be expanded to meet the increased demand. It will be at this stage that industrial construction will start to climb. Indications are that this climb could conceivably start during the later part of 1959.

Commercial nonresidential construction should increase about 2 percent during 1959, with a total of $3,630,000,000. Within this category, office building and warehouse contracts are expected to decline from $1,980,000,000 in 1958 to $1,900,000,000 in 1959, a drop of 4 percent. On the other hand, contracts for stores, restaurants, and garages should climb from $1,570,000,000 to $1,730,000,000 in 1959, an increase of 10 percent.

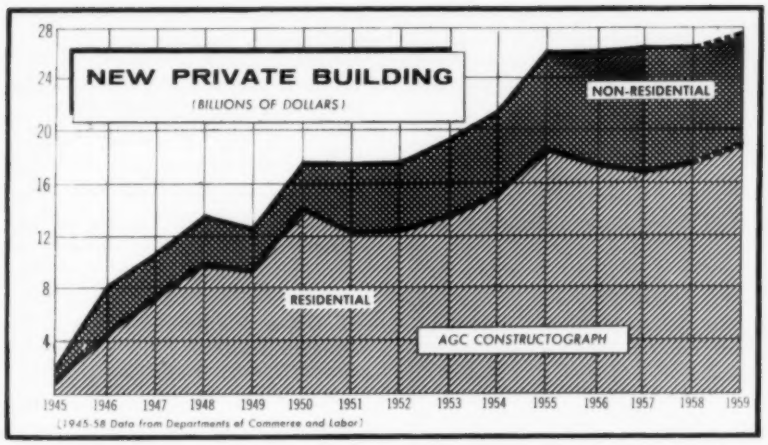
Other nonresidential buildings in this category, as a group, should show an increase of about 3 percent in construction volume, climbing from a 1958 total cost of $2,720,000,000 to $2,790,000,000 in 1959. In analyzing the segments making up this group, it is noted that religious and educational construction are expected to increase 10 and 6 percent, respectively, in 1959. On the other hand hospital and institutional, social and recreational, and miscellaneous construction are slated for respective declines of 1, 1, and 15 percent.

**Farm Construction** No appreciable change is seen for farm construction during the next year, which in 1958 amounted to $1,600,000,000. One of the main reasons for this situation is that the farm population has become relatively static. As a result of this unchanging farm population, no more than normal construction is anticipated for 1959.

**Public Utilities** This group is made up of railroad; telephone and telegraph; electric light and power; and gas and other public utility construction. As a complete group, it is expected to be responsible for $5,400,000,000 worth of construction, a decline of 3 percent from the 1958 figure of $5,575,000,000. Both gas and electric power and light construction are expected to show declines of 7 percent. Railroad, telephone and telegraph, and other public utility construction, it is felt, will increase 8, 6, and 7 percent respectively.

One of the best explanations for the decrease in elecrtic power and light and gas construction is that these facilities were provided in excess of potential during the last several years; therefore, 1959 will be a year when consumer demands are permitted to catch up with the existing potential. It is probable that these segments of public utility construction will increase.

**All Other Private Construction** This is a catch-all group for private construction that does not come within any of the other groups. It is relatively small, amounting to only $195,000,000 in 1958. The 1959 construction volume for this group is estimated at $200,000,000, a 3 percent rise over 1958.




**A moderate rise in residential construction is expected to offset a decrease in nonresidential activity, caused by declining industrial building.**

## PUBLIC CONSTRUCTION

**Residential Buildings** Outlays for public housing will reflect the high rate of dwelling units begun late in 1958, on which construction will be under way in the coming year. Some decline from the 1958 record of armed services (Capehart) housing starts is probable, but starts under other public housing are expected to continue at about the same level as in 1958—about 25,000. Because of this, government estimates for 1959 place public residential building construction 36 percent above the $830,000,000 reached in 1958, placing this type of construction at the $1,125,000,000 level in 1959.

**Nonresidential Buildings** Making up this combined group are the following segments: industrial, educational, hospital and institutional, administrative and service, and other nonresidential. This group, as a whole, represented $4,625,000,000 in construction in 1958. In 1959 it is expected to rise to $5,075,000,000, a healthy increase of 10 percent. This would place nonresidential building construction well above the 7 percent average anticipated for the entire construction industry in 1959.

The construction of public nonresidential buildings, involving mostly state and local funds, will follow about the same course as in 1958. Outlays for schools will continue to show only a small gain of 4 percent in 1959. Second only in importance to highways in dollar volume put in place in the public construction division, nonresidential public building should reach the $3,000,000,000 level for the first time, but will account for a somewhat smaller proportion of total construction expenditures than in recent years.

Spending for public hospital facilities will show another substantial increase (19 percent) following a significant rise in 1958, and is expected to total $475,000,000 in 1959. Some of the record amounts appropriated in 1958 for federal grants for hospital construction under the Hill-Burton Act are reflected in this total.

Construction of administrative and service buildings, such as courthouses, government office buildings, penal institutions, and firehouses, is expected to rise 42 percent in 1959, to reach a $750,000,000 high. This is almost double the average annual rate of spending for the last five years. Anticipated federal outlays for post offices and office buildings would contribute substantially to this expansion.

**Military Facilities** Expenditures for military facilities will rise about 16 percent to $1,400,000,000 in 1959, following a 2-year decline. This expansion will be chiefly for construction of long-range ballistic missile bases and dispersal bases for the Strategic Air Command. The small expected rise in public expenditures for industrial construction is to expand missile production facilities by the military and does not reflect the substantial increase in 1959 appropriations for reactors and other facilities to be constructed by the Atomic Energy Commission, which requires a long lead-time.

**Highways** This segment of public construction will be taken up much more fully in a

Workers chuting lightweight concrete from a ½-cu. yd. crane-hoisted bucket onto a form for an inverted-umbrella, hyperbolic-paraboloid roof of Hunter College library, New York, N. Y. This type of construction falls into the public, nonresidential building category.

section by itself a little later in this report. It might be well to mention briefly at this time, however, that highway construction in 1959 is expected to reach the $6,000,000,000 mark, according to government estimates. Other people who have studied this particular phase of construction are more optimistic and feel that highway construction will go as high as $6,500,000,000.

**Sewer and Water Systems** As a group, construction of sewer and water systems should show an increase of about 9 percent in 1959, bringing the 1958 total of $1,390,000,000 up to $1,520,000,000 during the current year.

Sewer installations should increase by more than $100,000,000 to a new record of $950,000,000, thus continuing the steady trend upward that began in 1945. Outlays for new water facilities, which have been stable for the last few years, will show only a small upturn following a minor decline in 1958. The estimated total for water system construction is $570,000,000.

**Public Service Enterprises** The largest percentage increase among types of public work, and the third-largest dollar volume increase ($240,000,000) is expected for public service enterprises. This gain reflects the large volume of expenditures in the construction of a major power facility by the New York power authority.

**Material Usage Factors For Federal Highway Construction**
**(Per Million Dollars of Contract Construction)**

| | | | |
|---|---|---|---|
| Cement | 15,000 bbl. | Structural steel | 240 tons |
| Bitumens | 1,567 tons | Reinforcing steel | 195 tons |
| Concrete pipe | 593 tons | Culvert pipe | 35 tons |
| Clay pipe | 14 tons | Misc. steel | 44 tons |

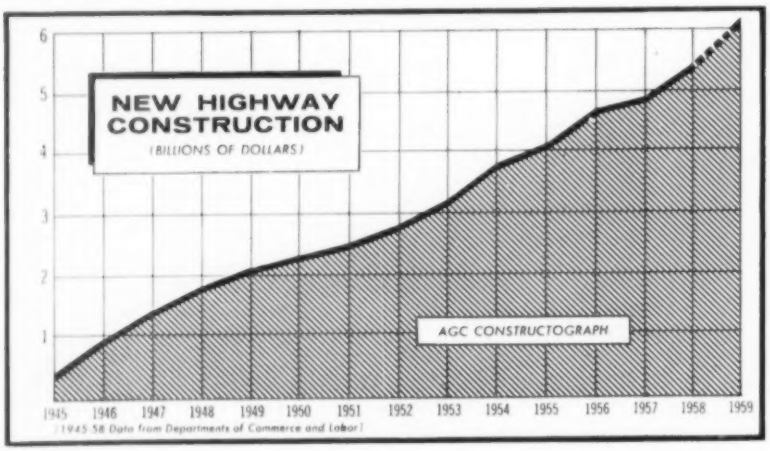
(Developed by Bureau of Public Roads)

Construction of this type rose from $393,000,000 in 1957 to $450,000,000 in 1958, an increase of 15 percent. In 1959, it is felt, public service outlays will climb to $690,000,000, an increase of 53 percent over last year's figure.

**Conservation and Development** An 8 percent expansion of conservation and development programs foreseen for 1959 will continue the uptrend which began in 1956 and will push such expenditures to a new high of $1,100,000,000. Most of the increase is in programs of the Corps of Engineers and the Bureau of Reclamation. A large part of the increased outlays by the Bureau of Reclamation in 1959 will be for expanding work on projects already under way, notably the Glen Canyon Dam in connection with the Upper Colorado River Storage project. Work under the Corps of Engineers will include dredging the Great Lakes channels to the depths of the St. Lawrence Seaway; and major flood control, navigation, and multipurpose projects, such as the Oahe Reservoir on the Missouri River and the Ice Harbor Lock and Dam in Washington state, which are approaching peak activity. In addition, completition of the Seaway has stimulated extensive harbor developments by Great Lake States.

**All Other Public Construction** Contained in this group is all public construction not listed in any of the other divisions. It represents only a small segment of public construction, but it has been growing rather rapidly. In 1958 construction of this type amounted to $145,000,000, an increase of 24 percent over 1957. Estimates made by the government for 1959 indicate that the volume for this category will jump to $210,000,000, an increase of 45 percent.

Highway construction should show a big rise (15 percent) under the impetus of the long-range program this year, and continue increasing for three or four years.




## HIGHWAY CONSTRUCTION

Highway construction is rolling . . . and gaining momentum as it goes. Many of the skeptics who were displeased with the initial slow start of federal highway construction are now beginning to show signs of satisfaction. Highway construction climbed from $4,971,000,000 in 1957 to $5,350,000,000 in 1958, a respectable increase of 8 percent. The joint estimate of the Departments of Labor and Commerce reveals that they expect highway construction will rise to $6,000,000,000 in 1959. Major General Louis W. Prentiss, U. S. Army ret., executive vice-president of the American Road Builders Association, looks at the prospects for 1959 highway construction with even more optimism, guessing that it will hit somewhere between $6,000,000,000 and $6,500,000,000.

Although 1959 highway construction is viewed with optimism, 1960 might indicate a certain amount of uncertainty at this time. The main reason for this uncertainty is the problem of financing future highway construction. Many states, and the Federal Government are going to have to locate some additional revenues for this purpose. The construction potential actually exists, but some means will have to

be found to pay for it. Higher gasoline taxes loom as a likely possibility.

The Bureau of Public Roads estimates each $1,000,000,000 of highway construction requires, on the average, 15,000 bbl. of cement, 1,567 tons of bitumens, 593 tons of concrete pipe, 14 tons of clay pipe, 240 tons of structural steel, 195 tons of reinforcing steel, 35 tons of culvert pipe, and 44 tons of miscellaneous steel. These figures were developed as usage factors from highway construction figures for 1955-56-57.

If 1959 highway construction lives up to government expectations about 90 million bbl. of cement will be used in this type of construction alone. This represents about 30 percent of the anticipated cement production for this year. In view of these figures it is easy to see the interdependence of highway construction and cement ouput.

A section of Michigan's 34 miles $21,000,000 Fenton-Clio Expressway, which was recently completed. This is a good example of the current highway construction seen throughout the United States.

Last fall the Bureau of Public Roads, U. S. Department of Commerce, headed by Mr. Tallamy, forecast that annual capital expenditures for highways will reach $7,100,000,000 in 1959 and will rise to $8,100,000,000 by the end of 1962.

Capital expenditures for highways . . . addition to or improvement of the highway plan) . . . comprise construction (including on-the-job engineering supervision) and preliminary engineering and right-of-way acquisition costs.

During the 5 years, 1958-62, Federal Aid funds are expected to provide a rapidly increasing share of the total capital expenditures, rising from 29 percent in 1958 to 40 percent in 1959 as the Federal Aid Program gets in high gear. After that there will be a gradual increase to 42 percent as the program stabilizes. The Federal Highway Act of 1958 provided $600,000,000 in federal aid for highways, for expenditure during 1958 and 1959. These funds were made available by a temporary suspension, by that act, of the pay-as-you-go clause in the 1956 Highway Act, which would have required a severe curtailment of expenditures early in 1960 to avoid a deficit in the Highway Trust Fund.

Funds available to states for capital expenditures for highways, both for matching federal aid and for non-federal aid free roads, are expected to increase from $2,600,000,000 in 1958 to $3,100,000,000 in 1962. The funds required to match federal aid are expected to rise from $944,000,000 in 1958 to $1,100,000,000 in 1962. Capital expenditures by states in non-federal aid work are expected to grow from $1,700,000,000 to $2,000,000,000 in the same period.

Capital expenditures by local governments (counties, town, and townships, cities, road districts, etc.) based on past trends, are projected to increase from $1,100,000,000 in 1958 to $1,300,000,000 in 1962.

Preliminary engineering and right-of-way acquisition costs represent about one-fifth of the total capital expenditures for highways. Construction expenditures, forecast as rising from $5,100,000,000 in 1958 to $6,900,000,000 in 1962, are expected to account for 83 percent of the total capital expenditures in 1958. It is anticipated that they will drop to 80 percent in 1960, and then rise to 85 percent in 1962.

**Estimate of Capital Expenditures for Highways, 1955-62 (in millions)**

| Calendar year | Federal-Aid Program: Federal aid | Federal-Aid Program: Matching funds | Federal-Aid Program: Total | Non-Federal-Aid: State | Non-Federal-Aid: Local | Non-Federal-Aid: Toll facilities | Non-Federal-Aid: Federal | Grand total |
|---|---|---|---|---|---|---|---|---|
| | | | Total Capital Expenditures | | | | | |
| 1955 | $ 660 | $ 625 | $1,285 | $1,118 | $ 917 | $ 937 | $ 93 | $4,350 |
| 1956 | 770 | 691 | 1,461 | 1,451 | 969 | 1,033 | 99 | 5,013 |
| 1957 | 1,268 | 843 | 2,111 | 1,428 | 1,040 | 958 | 122 | 5,659 |
| 1958 | 1,817 | 944 | 2,761 | 1,693 | 1,095 | 500 | 153 | 6,202 |
| 1959 | 2,811 | 1,163 | 3,974 | 1,583 | 1,150 | 176 | 168 | 7,051 |
| 1960 | 3,019 | 1,050 | 4,069 | 1,798 | 1,203 | 101 | 170 | 7,341 |
| 1961 | 3,285 | 1,097 | 4,382 | 1,832 | 1,261 | 100 | 163 | 7,738 |
| 1962 | 3,434 | 1,135 | 4,569 | 1,965 | 1,320 | 75 | 163 | 8,092 |
| | | | Construction Component* | | | | | |
| 1955 | 594 | 563 | 1,157 | 883 | 835 | 825 | 81 | 3,781 |
| 1956 | 685 | 615 | 1,300 | 1,146 | 875 | 936 | 86 | 4,343 |
| 1957 | 1,076 | 716 | 1,792 | 1,145 | 945 | 885 | 106 | 4,870 |
| 1958 | 1,348 | 834 | 2,182 | 1,354 | 1,003 | 469 | 130 | 5,138 |
| 1959 | 2,041 | 1,023 | 3,064 | 1,282 | 1,057 | 169 | 143 | 5,715 |
| 1960 | 2,141 | 901 | 3,042 | 1,456 | 1,101 | 97 | 145 | 5,841 |
| 1961 | 2,502 | 956 | 3,458 | 1,484 | 1,149 | 96 | 138 | 6,325 |
| 1962 | 2,861 | 1,013 | 3,874 | 1,592 | 1,197 | 70 | 138 | 6,871 |

*Excludes preliminary engineering and right-of-way.

BY U. S. Department OF COMMERCE

Cement Review and Forecast

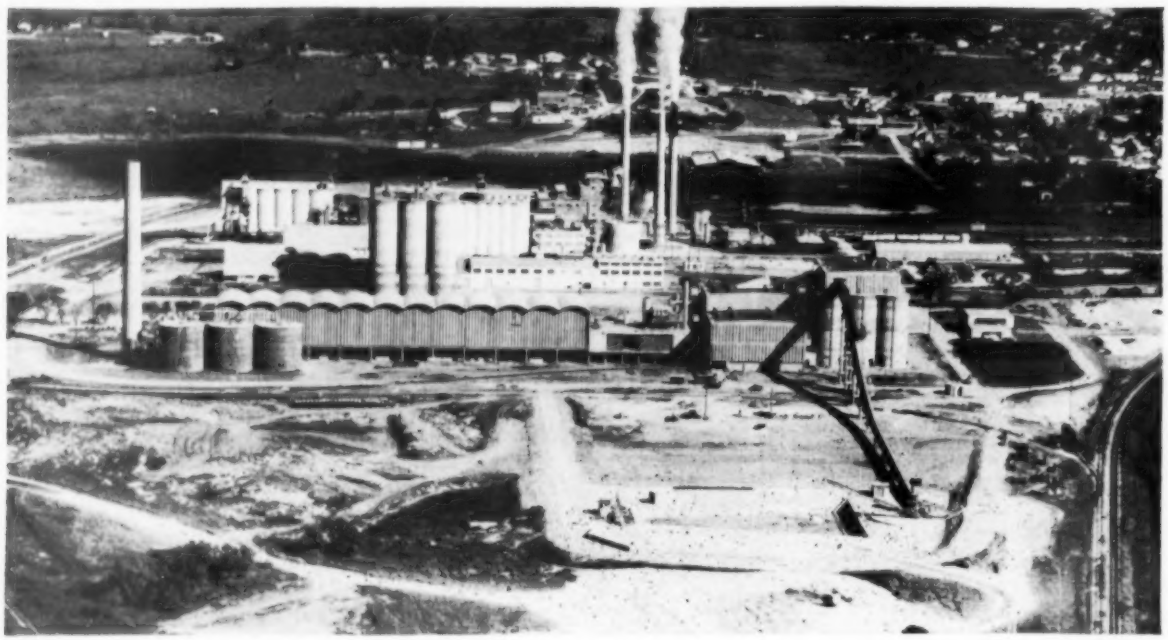
# 1958 Production and Shipments Up

## Moderate increase expected in 1959—Capacity remains ahead of demand

By WALTER E. TRAUFFER

IN 1958 the portland cement industry sharply resumed the upward trend in production and shipments which, except for 1957, had continued without interruption for 10 years. The increase in shipments may not have been quite sufficient to catch up with the all-time record year of 1956, but it was, nevertheless, easily the second-best year in history. Official government figures are now available only for the first 10 months of the year; but, with conservative estimates for the last two months, we believe the following totals for the year to be fairly accurate. These estimates, incidentally, are based largely on the expectations of the many producers answering our questionnaire. We estimate that portland cement production in 1958 was about 310,000,000 bbl. and shipments about 308,000,000 bbl. The value of ship-

An aerial view of Ideal Cement Company's new Ada (Okla.) plant. The old Ideal plant is in the background. The first kiln in the new plant went into operation late in 1958; the second will be completed soon.



ments, about $1,001,000,000, was without question the highest in history although there was comparatively little increase in prices during the year.

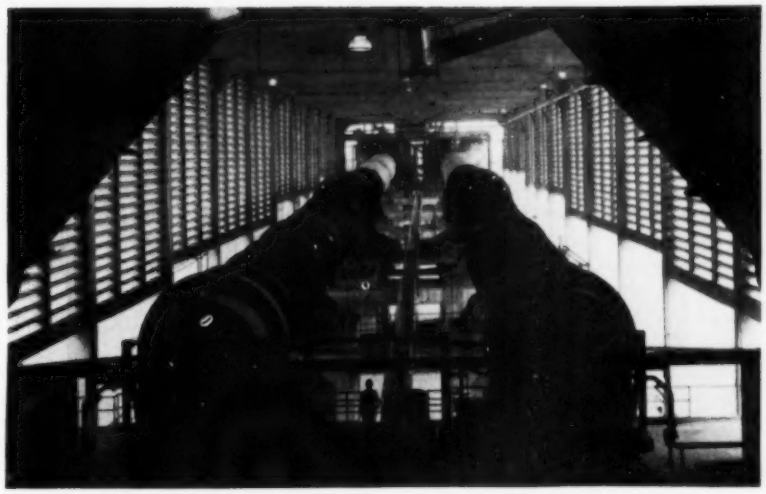
These figures indicate an increase of about 4 percent in production, 7 percent in shipments, and perhaps 8 or 9 percent in value of shipments from the 1957 figures of 298,424,000 bbl., 289,698,000 bbl., and $921,959,000, respectively. In 1957 there were decreases of 5.7, 5.8, and 1.9 percent, respectively, from the 1956 all-time records.

Production of portland cement through October (10 months) of 1958 totaled 259,698,000 bbl. or 9,297,000 bbl. and 3.6 percent over the corresponding 1957 period. Shipments through October totaled 265,890,000 bbl. or 14,443,000 bbl. and 5.4 percent over the 1957 period.

Stocks on hand at the end of October 1958 were 20,412,000 bbl., or 1,205,000 bbl. and 5.9 percent more than a year before. The lowest point in stocks is usually at the end of October, the highest low in many years. It compares with previous yearly lows of 19,207,000 bbl. in October, 1957; 12,996,000 bbl. in October, 1956; and 8,073,000 bbl. in 1955. The record low of 5,668,000 bbl. was in 1958. It must be remembered, however, that in each of the last several years several million barrels of additional cement storage capacity were built—in new plants and in additions to existing operations.

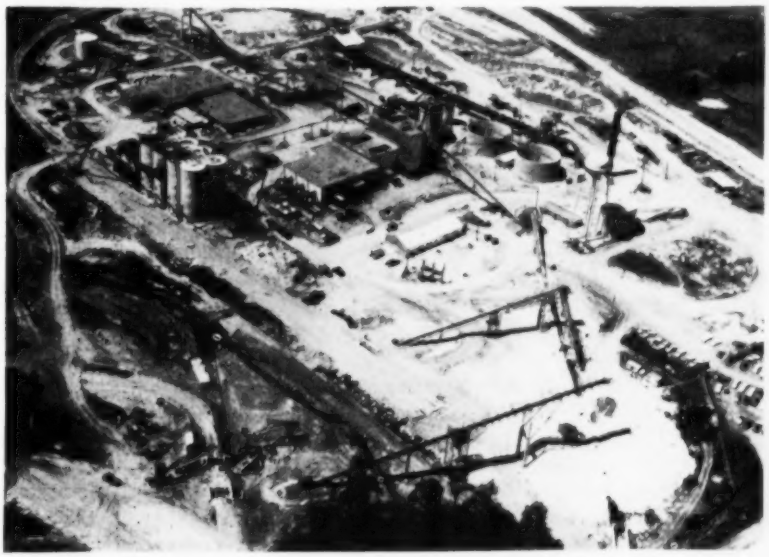
The cement industry will undoubtedly again enter the coming construction season with its storage silos full, and the capacity of these silos is at a new record level. A number of plants have already been shut down temporarily due to full silos, and most others will undoubtedly do so for varying periods before spring.

The increased demand for cement was, of course, the most important development of the year. Notable also was the substantial amount of productive capacity which went into operation during the year. Eight new plants and at least 18 important expansion programs were completed in 1958, at a cost of at least $180,000,000 and with a total annual capacity of about 28,700,000 bbl.



Above: The kilns at Ideal Cement Company's new 2,800,000-bbl. plant at Houston, Tex.

Below: The new 1,300,000-bbl. plant of Arkansas Cement Corporation, near Foreman, Ark., in the final stages of construction. The wash mill, where water and silt are mixed and piped to the slip tanks, is shown at the left foreground in the quarry area near the chalk stockpile (lower right).



Present indications are that eight new plants and 21 important expansion programs will be completed in 1959, for a total of perhaps 24,000,000 bbl. of capacity and at a cost of about $140,000,000.

We estimate that the productive capacity of the industry reached a new high of about 401,000,000 bbl. at the end of 1958, an increase of 21,000,000 bbl. or 5.5 percent over that of a year ago. By the end of 1959 capacity may increase from 12,000,000 to 18,000,000 bbl. or 3.0 to 4.5 percent, to a new high of about 413,000,000 to 419,000,000 bbl. As a result of this expansion the industry in 1958, in spite of the increased demand, used only about 78 percent of year-end capacity, compared to about 79 percent in 1957 and 91 percent in 1956. Using our estimated figures also, perhaps 76 or 77 percent of year-end capacity will be used in 1959.

Our information shows that only one of the eight new plants in 1957 —and that a small one—was built by a company new in the business. Of the eight new plants completed in 1958, two — also small — were built by other than existing produc-

ing companies, one by a power company seeking diversification, etc., and the other by a large user of cement. Of the eight new plants scheduled for completion in 1959, two are being built by companies not now cement producers in this country. One is a small independent operation, the other a large plant to be operated by a company affiliated with a large world-wide producer. Five proposed new plants which, if built, will not go into operation until 1960 or later, are projects of existing producers. Three other recent new plant proposals of a very indefinite nature have been made by companies not now in the cement business. Such projects have always had a high mortality rate.

Prospects for 1959 are definitely favorable because of expected improvement in construction volume and business in general. Business experts expect a moderate increase in business volume but nothing approaching a boom. Construction experts predict a moderate increase in construction dollar volume and, because of some expected increase in costs, a small increase in actual construction volume; cement company heads feel that cement demand will increase somewhat, as a result of the improved business and construction prospects. Their estimates, and information from other sources, indicate an increase of about 9,000,000 bbl. or 3 percent in demand in 1959 for a total of about 317,000,000 bbl.

Producers reported no shortages of fuel or supplies in 1958 and anticipate none in 1959. No other interference with operations is anticipated. Labor troubles were minor, at least as compared to 1957. Labor contracts for a large part of the industry expired last summer, and about 20,000 workers received substantial increase in wages, overtime, and pension, and also other benefits. A few producers feel that there might be some temporary local shortages of cement in 1959 but that these will readily be taken care of by overflow from neighboring areas.

## CONDITIONS

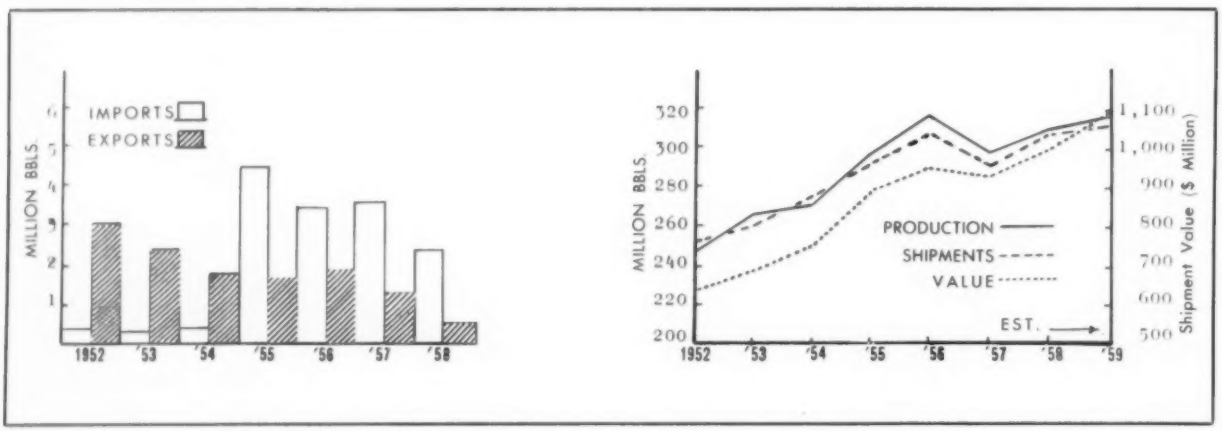
Producers answering our questionnaire, representing more than two-thirds of the productive capacity of the industry, were almost unanimously of the opinion that 1958 was a satisfactory year. Most of them reported substantial increases in shipments, especially in September and October. Only three companies, operating one plant each, reported less business than in 1957. Estimates on total shipments for the industry varied from 300,000,000 to 308,000,000 bbl., as compared to the 289,698,000 bbl. actually shipped in 1957. Our estimate, based on later information, is that 1958 shipments were between 307,000,000 and 311,000,000 bbl.

A company operating in the eastern half of the country says: "1958 has been a good year for our company despite adverse weather conditions that severely retarded shipments during the first quarter. However, we registered heavy shipments during the second and third quarters which reversed the trend and produced results that were quite satisfactory. . . . "

A large company operating in the West and Southwest said: "In the early part of 1958 the entire country seemed to be undergoing a minor recession which, coupled with unfavorable weather extending over practically the entire nation, gave the cement industry a bad start during the first quarter that continued through the second. The gradual improvement in housing starts, together with the ending of the minor recession and the stepped-up rate of construction on the Interstate Highway System, made the third quarter look much better, and the fourth quarter will probably continue to reflect this improvement, so that for the year shipments for 1958 should approach the total of the peak year of 1956."

Another California producer says. "Conditions in the northern California cement industry have been somewhat less favorable in 1958 than in previous years. Starting this winter with full silos of finished cement and much larger than usual inventories of clinker, our company and others in this area have been forced to curtail production from time to time in order to avoid overbalanced stocks. Overtime work has been almost completely eliminated. Conditions in 1959 should be substantially the same as in 1958—a good but very competitive year. . .

"This excess capacity has led to a buyer's market and intense competition. Symptoms of oversupply have included increased freight absorption, tie-in sales of cement with



sand, gravel, and other building materials, and cases of specialty and other finer ground cements selling for the price of regular cement. . .

## PROSPECTS

The cement companies answering our questionnaire were, on the average, moderately optimistic about business conditions in 1959 and definitely so on long-range prospects. None expected their 1959 shipments to be under the 1958 mark; only two companies expect about the same volume; all the others expect to ship more cement in 1959 than in 1958. Increases of up to 10 percent are expected, most of them in the range of 3 to 5 percent, which is about the average. Based on our estimate of about 308,000,000 bbl. shipped in 1958, this would mean about 320,000,000 bbl. for 1959.

One company operating plants in the East and Midwest predicts about a 5 percent increase in volume of sales in 1959. This is based on an analysis of favorable and unfavorable factors, which are listed in the order of their importance:

*Negative Factors*

1. Labor
2. Overproduction
3. Foreign cement
4. Additional competition on account of large cement users entering the cement manufacturing field.
5. Percentage depletition.

*Positive Factors*

6. Increase in population
7. Federal Highway Program
8. New techniques

According to a large company operating throughout most of the country, "The outlook for 1959 is for a modest overall increase in shipments. Informed sources are forecasting an increase in construction, based on dollar volume, of 3 to 7 per cent. Generally speaking, physical volume will not improve proportionately because of increased costs. However, actual construction on the highway program is now proceeding vigorously. Total net construction contract expenditures in 1958 are expected to exceed 1957 by 13 percent. In 1959 the increase over 1958 is expected to be more than 15 percent. Because highway paving requires more cement per dollar spent than most other types of construction, the increase in cement usage next year will be substantial, even though the physical volume of the other types is static. We are, therefore, expecting a moderate increase in our shipments next year. . ."

The new 680,000-bbl. plant of Mississippi Valley Portland Cement Company at Redwood, Miss., as it looked a few months ago. It is now reported to be in operation.

With respect to long-range prospects" . . . cement shipments should reach 420 million barrels in 1965."

"Assuming an operating rate of 90 percent, which is typical of the industry during peak periods, a capacity of more than 460 million barrels would be needed to support this volume. Therefore, in our opinion, while there exists some excess capacity in the industry today, the gradually increasing demand over the next several years will bring into proper balance the relationship between capacity and consumption."

According to a large company operating in the Middlewest and West, "Country-wide use of cement in 1959 should increase slightly over 1958. There should be a fairly heavy carry-over of the high level of contract awards of recent months. Highway construction has developed a desirable momentum, which should continue. Although a slump is predicted for public utility and industrial construction, most of this should occur in the first half of the year, with the last half about equal to the last half of 1958. On balance, we expect 1959 to be good . . ."

A southwestern producer says: "It is our belief that the cement industry's outlook for 1959 is very good. Home and industrial building is on the increase following the recession of early 1958. The highway program in many areas will begin using large amounts of cement following completion of grading.

"The highway program, as reflected into 1959, will possibly increase the use of cement by 25 percent. This largely justifies the increased production due to plant expansion in most areas of our country. It is felt that the highway program, plus continued expansion of our overall economy, will take up the lag between production and use in the next 2 to 3 years."

A West Coast producer says: "Effects of the Federal Highway Program were felt in a small degree through our territory in 1958. During 1959, some of the industries will benefit from this program. We should note a word of caution here, however, as highways are only one use for cement and the Federal Hiway Program will raise cement demand in the west only a few percentage points in the next year or two. Part of this is, of course, caused by the fact that California has had its own accelerated highway program."

## IMPORTANT DEVELOPMENTS

There were a number of important developments and trends during the year, but perhaps the one most vital to the future of the cement industry was the attention given to uniformity and quality of cement. For several years there have been complaints from large users of cement on lack of uniformity in strength and other characteristics. Cement from some plants has been shown to vary widely in quality from one season to another, with the lowest quality coming during the summer when demand is greatest. There is no doubt that some of this was due to the fact that the demand for cement exceeded capacity, and some producers were crowding their equipment beyond its efficient operating level.

This condition of excess demand no longer exists, but producers are fully aware of the fact that considerable improvement is still possible in the quality and uniformity of their product. Some users now charge that the quality of some cements varies widely over periods of a few days and also that there is too wide a variation in strength, color, etc., between cement from different plants serving the same area. It is obvious from our own contacts with the field and in letters from producers that this problem is receiving their full attention, and that any existing irregularities of this kind are being corrected. The production of a uniform high-quality product at the lowest possible cost and price is now one of the major aims of portland cement industry leaders. There seems to be full awareness of the fact that such improvement is necessary if the industry is to retain its competitive position.

An east-central producer reports: "A trend relating to our own operations was the increased use of trucks for cement delivery. In 1958 approximately 80 percent of our cement moved by trucks, versus 65 percent in 1957."

A large producer with plants throughout most of the country says: "Now that new capacity building has overtaken present and near-future demand, we have turned full attention once again to large-scale plant modernization. This, we believe, is the urgent present-day need, not only in our company but in most of the industry as well. The level of operating efficiency must be raised substantially if the industry is to retain its traditional competitive position. Large amounts of capital must be spent to accomplish this. ."

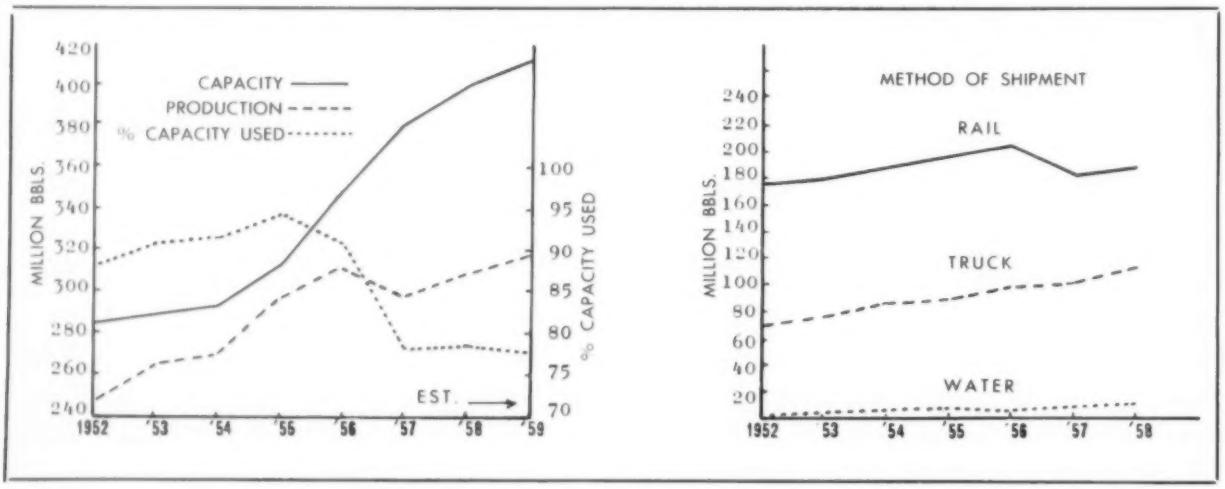
According to another West Coast producer, "One of the most significant developments that occurred during 1958 was the development during the year of a sizable sales volume for the cement industry which . . . was no surprise to us even though the industry was generally pessimistic at the time. Probably the next most significant occurrence was attributable to the recession, which affected many parts of the industry in 1957 and 1958. This was the emphasis on the reduction of costs. This was attacked in two ways: (1) through better management of each facility, and (2) through improved equipment and a greater utilization of automatic equipment. . .

"With regard to manufacturing methods and technological advances, we expect to achieve the following in the future: (1) efficiency in the grinding and burning operation through instrumentation; (2) attainment of semi-automatic blending by remote control from the plant laboratories; (3) complete control over premature stiffening in portland cement concrete."

## EXPANSION VS. ECONOMY

There were again rather divergent views among producers as to the effect on production costs and efficiency of the capacity added at high current costs. One western producer who is replacing old high-cost capacity feels that, in spite of existing excess capacity in the area, a steady program of modernization and expansion should be followed so as to be able to furnish the quality and quantity of cement needed in the future.

Another western company says that its ". . . cement plant expansion program has been fully justified . . . both from the standpoint of efficiency and demand. Our new facilities are highly efficient and are operating at a high rate of capacity. While it is no doubt true that in other areas of the country new cement plants have been built or planned without regard to reason-



able future demands, there seems to be little doubt that the tremendous growth in the West will require further plant expansion in our territory within the next five years."

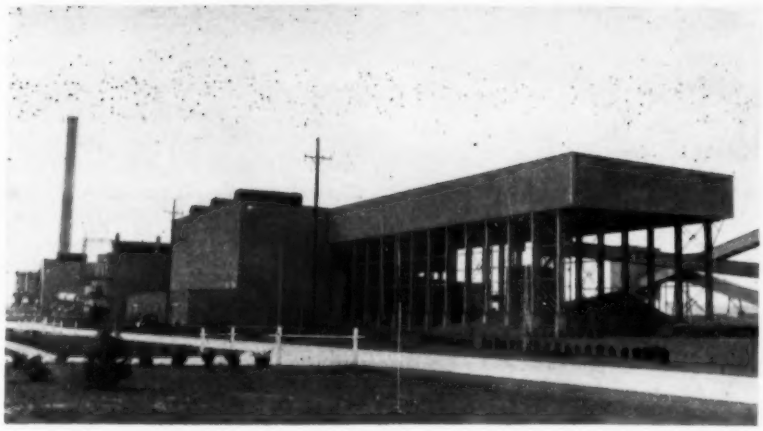
## PROFITS, PRICES, COSTS

The partial information available on profits, prices, and costs in 1958 indicates that the portland cement industry had another profitable year. With the volume of shipments up about 6.5 percent over 1957, and a small but general increase in prices at the first of the year, the total value of shipments apparently set a new all-time record of about $1,001,000,000. This compares to the previous record of $940,020,000 in 1956 and the $921,959,000 total in 1957. The average price in 1958 was apparently about $3.25 per bbl., compared to $3.05 in 1956 and $3.18 in 1957.

Costs went up considerably in 1958 as prices of nearly everything were increased during the year. Labor costs, particularly, were up from a year ago. Only a part of this increase, apparently, was offset by operating economies and the higher efficiency of the new plants and equipment added in the last few years.

Profits, as a result of higher costs but static prices, were apparently somewhat lower than in 1957 and considerably under 1956. This assumption is verified by financial reports available for the first and second quarters, and in a few cases the third quarter of 1958. Again there was considerable variation from company to company with decreases in profits ranging up to 40 percent. Most companies reported minor decreases and a few reported rather small increases.

Prospects are for somewhat bigger profits in 1959, but no spectacular increase is expected. As in 1958, producers are hesitant about increasing prices while capacity is still far ahead of demand, and apparently few plan to hike their prices. A number have announced that they definitely plan to hold prices at present levels. Costs undoubtedly will rise again, especially for labor, and are again likely to go up faster than prices. Whatever increase there is in profits will probably be due to increased production and to further operating economies.



The new 2,250,000-bbl. wet-process plant of Alpha Portland Cement Company at Lime Kiln, Md., which went into operation in June, 1958.

According to an eastern producer, "It would seem that the most outstanding change in this area is the move away from quarterly pricing to a one-year guaranteed price. Second to that would be the concerted effort of eastern railroads to establish rates that are more realistic in regard to the area problems."

An east-central producer says: "Our costs are presently increased above those of a year ago because of a recent wage increase which will prevail through the first three quarters of 1959. We have advised our customers that our prices will not be increased during 1959, and consequently we will absorb additional cost of production."

A large producer with plants in the South, Midwest, and West says: "In early November we announced our selling and pricing policy for 1959. Under this new policy we not only provided a firm price for the entire year 1959 at no increase over the 1958 price, but established it well in advance of its effective date. Furthermore, a ceiling was set on the price increase that may be made during the succeeding year. Under this new policy, cement buyers are provided the greatest possible degree of price protection on specific contract work. At the same time, it provides some degree of protection for ourselves against sudden increases in cost and minimizes the abuses which take place when supply contracts at fixed prices run to assorted and sometimes uncertain termination dates. It is our belief that this new policy provides a happy solution to most of the supply problems which have plagued cement producers and users in the past . . ."

According to a California producer, "There still seems to be a slow upward trend in manufacturing costs. This is offset by the efforts of producers to improve operating efficiencies through continuous cost reduction efforts and installation of more efficient equipment. . . .

"There have been no cement price increases in this area for over two years. The outlook for cement prices here in 1959 is uncertain, but we expect on balance that this price stability may continue."

## 1958 CAPACITY INCREASE

The increase in the capacity of the portland cement industry in 1958, while substantial, probably did not approach the record 34,143,000 bbl. added in 1956 or the 30,944,000 bbl. added in 1957. Official capacity at the end of 1957 was 380,386,000 bbl. It is estimated that about 28,700,000 bbl. of capacity was completed in 1958 in the form of eight new plants and at least 18 major plant expansions. At least 23 new kilns and 67 new grinding mills were installed. The cost of all these addition was over $180,000,000. Much of this capacity, of course, replaced existing facilities, but most of it—we estimate about 21,000,000 bbl.—was new capacity.

The productive capacity at the end of 1958, therefore, is estimated to be about 401,000,000 bbl.

**New Plants** The eight new plants completed in 1958 have a combined capacity of about 15,700,000 bbl. annually, and about 13,200,000 bbl. of this is new capacity. These plants cost a total of $112,000,000; but it is not known how much, if any, of this was for land. Included in these plants were 13 new kilns and 31 new grinding mills. Five of these plants are completely new and in new locations. The other three are actually new plants built alongside older installations, of which two are still operative, and on which they depend only in minor ways. The third of these completely replaced an older operation. No other plants are known to have been abandoned during the year.

The eight new plants completed in 1958 compare with eight in 1957, four in 1956 (plus one for clinker grinding only), two in 1955, two in 1954, none in 1953, three in 1952, three in 1951, four in 1950, one in 1949, two in 1948, and one in 1947—a total of 38 in the 12 years since V-J day.

The eight new plants completed in 1958 are those of the Alpha Portland Cement Co. at Lime Kiln, Md.; Arkansas Cement Corp., Foreman, Ark.; General Portland Cement Co., Miami, Fla.; Hudson Cement Corp., Kingston, N. Y.; Ideal Cement Co., Houston, Tex., and Ada, Okla.; Lehigh Portland Cement Co., Miami, Fla.; Medusa Portland Cement Co., Wampum, Pa.

**Plant Expansions** At least 18 cement plants are known to have completed major expansion and/or improvement programs in 1958. Included in these programs were at least 10 new kilns and 36 new grinding mills. These 18 plants are known to have installed at least 13,000,000 bbl. of capacity during the year. Of this, probably about 8,000,000 bbl. was new capacity not replacing existing capacity. Other plants made minor changes, some of which probably also added some capacity. This work cost a total of at least $70,000,000.

**Capacity** The total capacity estimated to have been installed in 1958—28,700,000 bbl.—compares with our estimate of 27,000,000 bbl. made a year ago. We also estimated then that about 18,000,000 bbl. of this was actual new capacity, this comparing with our present estimate of 21,000,000 bbl. The actual increase in the capacity of the cement industry in the first 10 months of 1958, according to the U. S. Bureau of Mines, was 16,107,000 bbl. As the official capacity of the industry was 380,386,000 bbl. at the end of 1957, this would mean a total capacity of 396,493,000 bbl. at the end of October, 1958.

During the last year 78.5 percent of the year-end capacity was used, compared with official figures of 90.6 percent in 1956 and 94.3 percent in 1955. With the estimated capacity of the industry about 401,000,000 bbl. and the production about 308,000,000 bbl., only about 76.8 percent of the year-end capacity was utilized in that year. Little change in this percentage is expected in 1959 as capacity added will probably exceed the increase in sales.

## FUTURE INCREASES

At this time the information available on the amount of plant expansion to take place in 1959 and later is necessarily incomplete, and only rough estimates are possible. Most large projects, including new plants, can be definitely scheduled, but others not yet announced could be started and completed within the year. Projects under way could still be expanded or curtailed, and others not yet started could be postponed.

According to present information, there will be eight new plants completed in 1959, and 21 plants will complete major expansion programs. These projects will involve a total of 18 new kilns and 35 grinding mills and will have a total capacity of about 24,000,000 bbl. The cost of these additions will be approximately $140,000,000. About 18,000,000 bbl. of this capacity will be new. Even allowing for the possibility that some of this work might be postponed because of the overcapacity now existing in the industry, and that some might not be completed until 1960, it seems that at least 12,000,000 bbl. is sure to be added, bringing industry capacity to a new high of about 413,000,000 bbl. at the end of 1959.

**New Plants** There are at this time seven new plants scheduled for completion in 1959 and known to be in various stages of construction. One of these might possibly not be complete until early 1960. Ground is reported to have been broken for one other plant scheduled for 1959 completion, and plans have been announced for at least five plants which would not go into operation until 1960 or later. All but two of the above 13 new plants are to be built by existing cement producing companies.

The eight new plants scheduled for completion in 1959 will have a total of 11 new kilns and 22 grinding mills, and a combined capacity of about 14,000,000 bbl. annually. Their total announced cost will be about $94,000,000, but it is not known whether any of this includes cost of land. Seven of these plants will be completely new operations at new locations. The other will be a basically new plant alongside an older operation. It is estimated that 13,000,000 bbl. of this capacity will be new.

The seven new plants now in various stages of construction and scheduled for completion in 1959 are those of the Arizona Portland Cement Co. at Ash Fork, Ariz.; Columbia-Southern Chemical Corp., Barberton, Ohio; Dundee Cement Co., Dundee, Mich.; Ideal Cement Co., Tijeras, N. M.; Mississippi Valley Portland Cement Co., Redwood, Miss.; Phoenix Cement Co., Clarkdale, Ariz.; and Southwestern Portland Cement Co., Odessa, Tex. The plants for which ground has reportedly been broken is the Kosmos Portland Cement Co., Kosmosdale, Ky.

The five plants for which plans have been announced but which, if built, would probably not be completed until 1960 are those of the Dewey Portland Cement Co., Tulsa, Okla.; Permanente Cement Co., Scholle, N. M.; Riverside Cement Co., Oro Grande and Crestmore,

Calif.; and Ideal Cement Co., Redwood City, Calif.

In addition to the above, plans were announced during the year for new plants to be built by the Nevada Cement Corp., Mill City, Nev.; New England Portland Cement Co., Rockland, Maine; and Western Cement Corp., Odessa, Tex. There has been no recent information on any of these projects. Another plant is proposed for California, but no definite information has as yet been released on this.

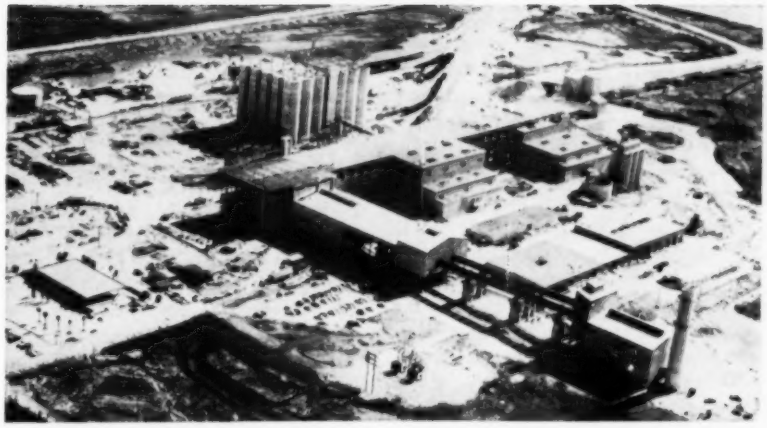
**Plant Expansion** Present information indicates that at least 21 existing cement plants have important additions and/or improvement programs under way or definitely planned for completion in 1959. These projects include seven new kilns and 13 grinding mills, with a total capacity of about 10,000,000 bbl. The total investment is estimated at about $45,000,000. A good guess at this time is that about half of this capacity, or 5,000,000 bbl., will be new. There is ample time for many small projects to be started and also to be completed in 1959.

## CHANGES IN OWNERSHIP

Compared to 1957, there were few changes in ownership or organizational setup among the cement companies in the United States. The only real ownership change was the purchase, late in the summer, of the Olympic Portland Cement Co., Ltd., by the Permanente Cement Co. Olympic's 1,750,000 bbl. plant is at Bellingham, Wash.

The Marquette Cement Mfg. Co. on March 1 absorbed three of its five cement sales subsidiaries: the Cumberland Portland Cement Co., Chattanooga, Tenn.; the Hermitage Portland Cement Co., Nashville, Tenn.; and the Superior-Marquette Cement Co., Columbus, Ohio. Only the brands and office identities were changed to those of the parent company.

The Texas Portland Cement Co., Orange, Tex., late in the year filed a voluntary petition for corporate reorganization under the Bankruptcy Act. The plant is reported to be in full production.



An air view of Lehigh Portland Cement Company's new plant in the Everglades area near Miami. Capacity of this plant, which went into production last August, is 2,500,000 bbl. annually.

## TRENDS IN MANUFACTURE

In 1958 there were again many advances in the technology of cement manufacture, both in theory and in practice. These covered all the important phases of manufacture, but the most important advances were in the field of automation and control. These installations were made not only to lower production cost, but also to produce more cement of more uniform quality. The trend toward larger kilns and mills continued, and the application of TV has expanded and has also been applied to kiln control.

**Automation and Control** The trend toward automation and centralized control made great strides during the year. Central control boards are now standard not only for kilns, but for nearly all other departments of a cement plant, including crushing, raw grinding, finish grinding, and storage and packing. These control boards have illuminated flow diagrams which tell at a glance how operations are progressing. The best progress has been made in kiln control, and several manufacturers are reported to be working on complete kiln control systems which require little if any human attention. The complexity of such a system is evident from the fact that some of the large new rotary kilns require up to 44 separate controls, and the grate-rotary kiln requires 56 controls.

One of the most important steps in the direction of automation, however, is being made in the raw-material department of a West Coast plant. An electronic digital control computer has been ordered which is expected to make possible 100 percent automatic operation control. The company's new, fully-mechanized crushing and rock-blending system is scheduled to be in operation in January, 1959. The computer will be installed soon afterward and is expected to be functioning fully by spring. It will automatically bring in and use data from an X-ray spectrometer which analyzes raw-material samples. In addition to its control functions, the computer will also be used to collect and analyze data needed in planning other automatic control systems for the plant.

**Kilns** The quest for greater operating efficiency and production economy was accelerated in 1958 due to the lowered demand and increased competition. The increased costs and static price levels will place further emphasis on efficiency and economy in 1959. Improvement in burning continues to get the major share of attention, but there were no startling new developments during the year. The Allis-Chalmers A.C.L. grate and rotary kiln, and the various types of preheaters all made progress, including the Fuller-Humboldt suspension-type preheater, the F. L. Smidth slurry preheater, and the Kennedy-Van Grudex preheater. It is reported that a vertical type of kiln similar to units widely used in Europe for portland cement calcining

is being installed in this country. It is rumored that another vertical-type kiln is being tested in a plant. A 500-bbl. per day pilot installation of the Fuller Pyzel kiln is also reported.

For several years the trend in rotary kilns has been toward larger diameters. A variation in design is the dumbbell type, which has been common for some years in Europe and elsewhere but is new to this country. This design provides large preheat and firing zones which are said to give excellent results. What is said to be the first installation of (two) such kilns in this country is now under way in a large new plant scheduled for completion late in 1959. These kilns are to be 16 ft. 6 in. in dia. at both ends and 15 ft. at the center, and 460 ft. long. Heat-exchanging chain systems will be used in the enlarged preheating zones.

**Television** The application of television to the cement industry is not new, but its scope has been widened considerably during the year. Television is being used for kiln control in at least two plants, and other installations are planned. Probably the widest application of television to a cement plant was operative in July, 1958. This company placed eight industrial television cameras at strategic points in the rock-crushing circuit and six monitors grouped together in the primary crusher operator's control house enable the operator constantly to observe the flow of rock at various critical points, from the discharge of the quarry trucks to the storage of the finished stone.

**Dust Collectors** Perhaps more improvement has been made in recent years in kiln gas dust collectors than in any other area of cement plant equipment and operation. Several noteworthy improvements were made during the year in mechanical dust collectors and in electrostatic precipitators. The outstanding development, however, was the application of cloth bag filters for kiln exhaust gases, this being made possible by the use of silicone-coated glass cloth bags. These have stood up successfully with temperatures of 500 to 550 deg. F. An added advantage is that the smooth surface of the cloth sheds dust without shaking.

This type of cloth has been used in other industries for some years, but the first plant installation in the cement industry went into operation in October, 1957. Gas from a 10-by 330-ft. kiln enters a housing at 800 to 900 deg. F., then goes through a multiple cyclone-type collector. About 95,000 c.f.m. of gas at 550 deg. F. goes through a fan and a duct to the baghouse. This is a simple pressure-type unit with 576 bags and a total filtering area of 43,000 sq. ft. The cleaned kiln gases are released to atmosphere under the eaves of the collector building. The same company has installed a similar unit at another plant, and other installations are said to be under way.

**Other** During the year there was a continuation of the trend toward larger grinding mills—both in diameter and in overall size. A new plant being built will have 12-by 36-ft. mills driven by 2,500 hp. motors.

There is said to be considerable interest in the European practice of using heat exchanger chain systems in dry-process rotary kilns. One such installation is said to be in operation in this country.

The use of automatic lubrication in cement plants, heretofore confined largely to grinding mills, is reported to have been extended to kilns and other types of equipment.

The use of the radiation density meter for slurry control in wet-process plants is reported to be growing.

An interesting development which has not yet reached the local scene is the practice of pumping limestone from the quarry to the plant in the form of slurry. Several producers in the United States are reported to be studying this technique.

## IMPORTS AND EXPORTS

Only partial information is available at this time on imports of foreign cement into the United States in 1958. It is known that 2,247,736 bbl. of portland cement were imported in the first 9 months of the year, a 32 percent drop from the 3,290,711-bbl. total for the same period of 1957. Values of imports were $5,929,218 and $12,281,175, respectively, indicating a considerable decrease in value per bbl. Imports for all of 1957 totaled 3,856,435 bbl., and the 1958 total is estimated at about 2,500,000 bbl. This is the third successive year of decline in imports, but the total is not yet back to the pre-shortage level of the years 1954 and back to 1948, when the average was about 580,000 bbl. annually.

We have had fragmentary information on imports along the Atlantic Seaboard and that part of New York state bordering on Canda. It is reported that, during the first ten months of 1958, more than 330,000 bbl. of foreign cement, mostly Norwegian, entered Bridgeport, Conn. In Providence, R. I., during the same period, 183,000 bbl. were imported, mostly Swedish. This cement was sold at prices from 20 cents to as much as $1.48 per bbl. below the prices for which domestic cement was sold. The depressing effect was reported to be out of all proportion to the quantity. Canadian cement, it is said is crossing the border in increasing volume. The present duty, it is felt, is entirely inadequate to cope with the situation.

Exports of standard portland cement and white cement to foreign countries for the first 9 months of 1958 totaled 518,473 bbl., down sharply from the 1,098,110 bbl. for the first 10 months of 1957. Value was $2,467,222, compared to $4,493,756 a year ago. The final total for 1958 can be only estimated, but it should be about 650,000 bbl., as compared to 1,331,000 bbl. in all of 1957. Of the total exports this year, 145,974 bbl. was white cement. Of these exports 40 percent went to Mexico, 20 percent to Canada, and 11 percent to Venezuela.

According to one large producer, "Foreign importation appears to have been a minor but disturbing factor in some areas. It is hardly likely that the importation of cement can be profitable to foreign producers except insofar as the producers and governments involved may be willing to ignore costs in order to secure dollar exchange."

## PLANT EXPANSIONS

**Allentown** The Allentown Portland Cement Co. early in 1958 completed a $1,750,000 improvement program at its Evansville, Pa., plant. Included was the installation of two 11- by 17-ft., 1,000-hp. Traylor raw-grinding mills, with drying in separators. A 500-bbl. per day semi-commercial Fuller "Pyzel" kiln installation is reported to have gone into operation at this plant.

**Alpha** The Alpha Portland Cement Company's chief contribution to the cement industry in 1958 was the new 2,250,000-bbl., $18,000,000 wet-process plant at Lime Kiln, Md., which went into operation in June. Major equipment includes two 11-ft. 3-in. by 400-ft. kilns, two 9- by 37-ft. raw mills and three 9- by 35-ft. finish mills—all Allis-Chalmers, and two Fuller horizontal coolers. This is a completely new plant at a new location. It was designed in co-operation with Alpha engineers, and built by the Macdonald Engineering Co.

The 500,000-bbl., $7,000,000 expansion program at the St. Louis, Mo., plant was largely completed late in 1957. At 2,600,000 bbl. annually, this is now the company's largest single plant. The last step, completed early in 1958, was the completion of 140,000-bbl. additional cement storage silos. All this work was done by the Macdonald Engineering Co.

Silos providing an additional 100,000 bbl. of storage will be built in 1959 at the Jamesville, N. Y., plant by the Nicholson Co.

**Arizona** The Arizona Portland Cement Co., a wholly-owned subsidiary of the California Portland Cement Co., has near completion a new 2,000,000-bbl., $12,000,000 plant at Ash Fork, Ariz. This dry-process operation has two kilns. It is expected to be in operation early in 1959.

**Arkansas** The new $12,000,000 plant of the Arkansas Cement Corp. near Foreman, Ark., went into operation late in 1958. This is a completely new plant at a new location. It has a capacity of 1,400,000 bbl. annually and was designed by Kaiser Engineers. All major types of cement will be made, including Types I and II portland, and masonry cement. Equipment includes a 12- by 450-ft. kiln and two 1,500-hp. Unidan mills—all F. L. Smidth—and a natural gas-engine-driven electric power generating plant. It is served by a 22-mile gas pipeline and a 2½-mile water line. This company is a wholly-owned subsidiary of the Arkansas Louisiana Gas Co.

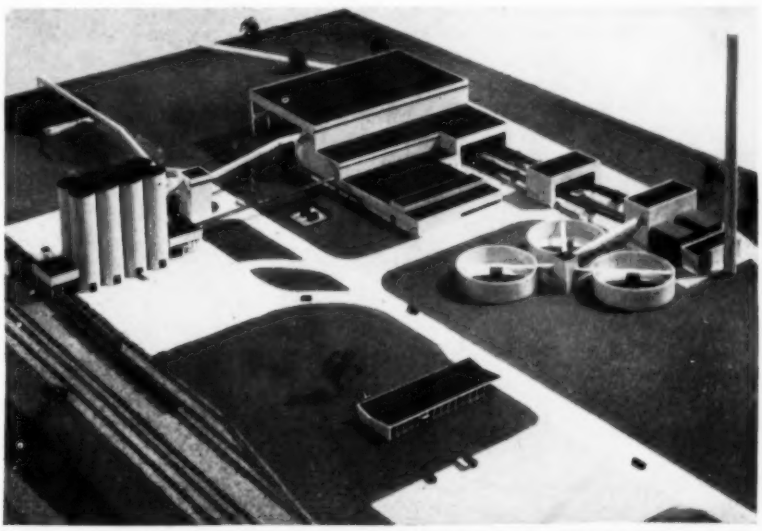
**Columbia-Southern** The Columbia-Southern Chemical Corp., a division of the Pittsburgh Plate Glass Co., has a new 1,500,000-bbl., $7,000,000 plant under construction at Barberton, Ohio, where it has a limestone mine. Equipment will include a 13-ft. by 14-ft. 6-in. by 460-ft. kiln with a slurry preheater, a 1,500-hp. raw Unidan mill, and a 2,000-hp. Unidan finish mill—all F. L. Smidth. The Macdonald Engineering Co. designed the plant and will build the 180,000-bbl. silos and bulk-loading facilities. Completion is scheduled for late in 1959.

Expansion at the Zanesville, Ohio, plant involved completion of the final details of a program started in 1955. Included was an 11-ft. 6-in. by 17-ft. finish mill, conversion of two existing finish mills to raw grinding, extension of the materials storage, and a new bulk-truck-loading station. This work increased capacity only slightly and was done by the Macdonald Engineering Co.

**Coplay** The Coplay Cement Manufacturing Co. plans a $500,000 modernization of its plant which will include remodeling of its two kilns, new dust collectors, etc.

**Dewey** The Dewey Portland Cement Co. has no plans for major improvements at either of its two plants in 1959. A site has been purchased near Tulsa, Okla., for a new 1,250,000-bbl., $12,000,000 plant which the company expects to build and for which plans are now being drawn. It is hoped that this plant will be in operation by mid-1960.

**Diamond** The Diamond Portland Cement Co., Middle Branch, Ohio, early in 1958 completed the installation of new bulk cement silos and loading facilities at a cost of $605,000. This completed a $5,000,000 expansion program which late in 1957 more than doubled the capacity to 2,400,000 bbl. annually. These silos were built by Macdonald Eng. Co.



This model of Dundee Cement Company's plant shows the layout of the $25,000,000 facility, which is expected to produce 5,000,000 bbl. of cement per year.

**Dundee** The new 5,000,000-bbl. cement plant of the Dundee Cement Co., which is now under construction at Dundee, Mich., is expected to be in operation about January 1, 1960. Total cost is estimated at $25,000,000. Equipment ordered includes two 16½- by 15- by 16½- by 460-ft. F. L. Smidth kilns, each rated at 8,000 bbl. per day, and five 12- by 36-ft., 2,500-hp. Nordberg mills—two for raw- and three for finish-grinding—two 10- by 70-ft. Fuller horizontal grate coolers, and Buell electrostatic precipitators. Design and construction of this plant is being supervised by the engineering department of the St. Lawrence Cement Co., which is also a subsidiary of Holderbank Financiere, Glaris, S. A., of Switzerland.

It is reported that a storage and packing plant will be built at Lake Calumet near Chicago.

**General** The new 2,500,000-bbl. plant of the General Portland Cement Co. west of Miami, Fla., went into operation late in 1958. This $15,000,000 wet process plant has two 11-ft. 3-in. by 425-ft. F. L. Smidth kilns, a 13- by 16-ft. Allis-Chalmers preliminary raw mill, a 9½- by 36-ft. Nordberg regrind mill, and two 13- by 16-ft. Allis-Chalmers finish mills.

**Giant** The Giant Portland Cement Co. is building a new and completely modern raw-grinding department at its Egypt, Pa., plant. Equipment will include two 1,000-hp., 11-ft. by 16-ft. 10-in. F. L. Smidth raw-grinding ball mills equipped for drying in the air separator. They are expected to be in operation in June, 1959. The old raw department will be retained and converted into additional clinker-grinding capacity. This addition is being designed and built by the Macdonald Engineering Co.

**Glens Falls** The Glens Falls Portland Cement Co., Glens Falls, N. Y., in December, 1958, awarded a contract to the Allis-Chalmers Mfg. Co. for the construction and equipment of a modern finish-grinding department. It will include two 10- by 34-ft. compartment mills with 1,500-hp. synchronous motors, and is scheduled to be operation late in 1959.

**Hudson** The Hudson Cement Corp., a wholly-owned subsidiary of the Colonial Sand & Stone Co. completed a new 825,000-bbl., $3,500,000 cement plant at Kingston, N. Y., late in 1958. Equipment includes an 11- by 320-ft. kiln and a rotary cooler (both Ansaldo, Italy), a Sturtevant separator, and a 26-ft. Traylor wash mill. It is reported that this plant may be doubled in capacity soon. Much of the cement produced will be used in Colonial's ready-mixed concrete operations in the New York metropolitan area.

**Huron** The Huron Portland Cement Co. is reported to have built a new storage and distributing terminal at St. Joseph, Mich.

**Ideal** The Ideal Cement Co. again made considerable progress on its long-range expansion and improvement program in 1958, and this will continue through 1959. In 1958 it completed a new 2,800,000-bbl. plant at Houston, Tex. Late in the year the first of two kilns went into operation at its new Ada, Okla., plant, and the second will be ready soon. Bulk-loading terminals were also completed at Lake Charles, La., and Sacramento, Calif. A new 1,000,000-bbl. plant under construction at Tijeras, N. M., is scheduled for completion in 1959.

The new 2,800,000-bbl., $16,000,000 wet-process plant at Houston, Tex., went into operation in May, 1958. This installation was built alongside the existing 1,250,000-bbl. plant there are supplements it. Major equipment includes two 12- by 450-ft. kilns and four 11- by 32-ft. mills—all Allis-Chalmers. This plant is notable for the extensive application of automatic control.

Also completed in 1958—in October—was the first unit of a new wet-process plant at Ada, Okla., which supplements the original 2,150,000-bbl. plant there. This $16,000,000 addition has a capacity of 1,500,000 bbl. annually, and major equipment includes a 12- by 45-ft. kiln and two 11- by 32-ft. Compeb mills—all Allis-Chalmers. During the year construction was begun on a second unit identical to the first, which will double the capacity of the new operation. Completion of this project is scheduled for about April, 1959.

Work is progressing on a $2,500,000 rock-crushing and handling installation at Ada. A new crushing plant at the quarry will be connected to both plants by a 5½-mile long 36-in. wide Link-Belt belt conveyor system with a capacity of 1,000 t.p.h., which will carry both rock and shale. It is said this will be the longest such installation in existence. It will cross several railways and highways and will be enclosed by a fence.

Other 1958 projects were storage and packing terminals at Lake Charles, La., and Sacramento, Calif. The Lake Charles installation was built at a cost of $1,500,000. The $2,500,000 installation near Sacramento has six silos storing 120,000 bbl., and distributes cement received by barge from the Redwood City plant. This structure replaced a temporary terminal built in 1957. Distribution from both terminals can be made by truck, rail, or barge.

Late in 1958 the installation of electrical precipitators was completed at the Baton Rouge, La., and Mobile, Ala., plants of Ideal at a total cost of $1,100,000.

Construction is reported to be progressing rapidly on the new 1,000,000-bbl., $12,000,000 dry-process plant at Tijeras, N. M. Equipment includes an 11- by 12- by 375-ft. kiln and two 11-ft. 6-in. by 17-ft. mills—all Allis-Chalmers. Completion is scheduled for about May, 1959.

No decision has yet been made on the proposed 3,000,000-bbl. addition to the Redwood City, Calif., plant, which will be essentially a new plant alongside the existing one. Equipment will include two 12- by 450-ft. kilns and four 2,000-hp. Smidth Unidan mills.

Plans have been announced for the construction of a $2,000,000 cement-storage and distribution terminal at Vancouver, Wash.

**Kosmos** The Kosmos Portland Cement Co., which in August, 1957, became a subsidiary

of the Flintkote Co., announced plans early in 1958 for expansion of its plant at Kosmosdale, Ky. Capacity will be increased from 2,200,000 bbl. to 3,200,000 bbl. annually by the end of 1959. New equipment will include an 11- by 400-ft. dry-process rotary kiln, a new raw department with two 11-ft. 6-in. by 17-ft. 8-in., 1,250-hp. raw-grinding mills, with drying in separator, a 9- by 90-ft. rotary clay dryer, and a 6- by 20-ft., 2-compartment mortar mill—all Traylor. This is the start of a new cement mill close to (but separate from) the present mill.

**Lehigh** The new Miami, Fla., plant of the Lehigh Portland Cement Co. went into operation in August, 1958. This is a 2,000,000-bbl., $21,000,000 wet-process operation with two 12- by 11- by 475-ft. F. L. Smidth kilns and eight Smidth Unidan mills—three 1,250-hp. mills for raw-grinding, three 1,250-hp. mills for clinker-grinding, and two 900-hp. mills for sand. Other equipment includes a 48- by 60-in. Traylor jaw crusher and a Fuller horizontal clinker cooler. This plant was built by the Macdonald Engineering Co.

A $14,000,000 expansion program at Lehigh's Mason City, Iowa, plant was completed in mid-1958. This increased the capacity by 1,000,000 bbl. to 3,000,000 bbl. annually. Equipment installed included an 11-ft. 6-in. by 400-ft. kiln, two 1,250-hp. Unidan clinker mills, and a 1,250-hp. Tirax coal mill—all F. L. Smidth—and electrical precipitators.

Work has started on what will eventually be a completely new plant at Mitchell, Ind. Two 11-ft. 6-in. by 400-ft. F. L. Smidth kilns have been ordered; these will about equal the capacity of the ten old kilns now in use there. The kilns are expected to be in operation late in 1959, and other changes will be made in stages over a period of years without a shutdown.

**Lone Star** The Lone Star Cement Corp. in 1958 completed the second stage of modernization of its Nazareth, Pa., plant. In 1956 a new crushing department, new raw- and finish-grinding departments, a blending system, etc., were completed. In operation early in 1958 were two 11-ft. 3-in. by 300-ft. Traylor kilns with Fuller grate coolers, coal mills, Research Cottrell combination mechanical and electrostatic dust precipitators, and two 225-ft. concrete stacks.

The expansion of Lone Star's Hudson, N. Y., plant from 2,000,000 bbl. to 3,000,000 bbl. annually was completed in 1958. Equipment included an 11- by 300-ft. kiln, two 9-ft. 6-in. by 15-ft. raw ball mills, two 7- by 22-ft. wet-grinding tube mills, and, in the finish department, two 9-ft. 6-in. by 14-ft. ball mills and two 7- by 26-ft. tube mills—all Allis-Chalmers. A Western Precipitation combination mechanical and electrostatic dust collector was also installed.

**Longhorn** The Longhorn Portland Cement Co., Longhorn, Tex., is reported to have installed an 8- by 38-ft. Allis-Chalmers Compeb mill.

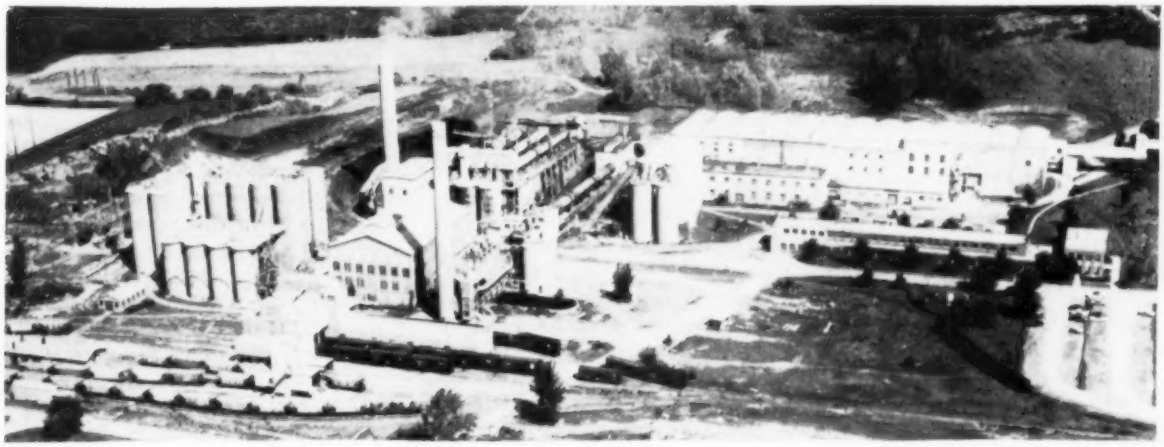
**Louisville** The Louisville Cement Co. is reported to have completed another phase of its improvement program at its Speed, Ind., plant late in 1958. Equipment includes an 11- by 390-ft. Allis-Chalmers kiln, a 10- by 34-ft. Compeb mill, a Fuller quadrant raw-material blending system, and a 7- by 33-ft. Fuller horizontal clinker cooler. Twelve new cement storage silos with a capacity of 200,000 bbl., and a bulk-loading system were included in this $3,500,000 program, which is being carried out by the Macdonald Engineering Co.

**Marquette** The Marquette Cement Mfg. Co. in 1957 began a $3,000,000 modernization program at its Nashville, Tenn., and Superior, Ohio, plants. In 1958 a large stripping shovel was installed at Superior; and major replacements, including complete rebuilding of the raw and finish grinding departments, were begun at the Rockmart, Ga., plant. Expenditures on this work in 1958 were about $6,000,000.

In 1959 the Rockmart project will be completed, and additional work will be started at Superior. This program will cost about $11,250,000, of which about $6,250,000 will be spent in 1959.

**Medusa** The Medusa Portland Cement Co. in May, 1958, put in operation its new 2,500,000-

The Hudson (N.Y.) plant of Universal Atlas Cement Company, a division of U.S. Steel Corporation.



bbl., $12,000,000 dry-process plant at Wampum, Pa. Equipment includes two 12- by 390-ft. kilns, two 11-ft. 6-in. by 17-ft. raw mills, and two 13- by 16-ft. finish-mills—all Allis-Chalmers. This plant completely replaces the old 1,250,000-bbl. plant at that location. Only the old silos and packhouse were retained. This plant was designed by W. R. Bendy, engineers.

**Mississippi Valley** Initial operation is reported to have begun recently at the new 680,000-bbl., $3,800,000 plant of the Mississippi Valley Portland Cement Co. at Redwood, Miss. The equipment for this plant, supplied by Kennedy-Van Saun, includes a 400-ft. kiln. Production of cement is expected to begin in January, 1959.

**Monarch** The Monarch Cement Co., Humboldt, Kans., early in 1958 completed a $6,500,000 expansion program at its Humboldt, Kans., plant to increase its capacity 50 percent to 2,250,000 bbl. annually. Included was a new 450-t.p.h. crushing plant in the quarry, a third 10- by 230-ft. Allis-Chalmers kiln, and a completely new milling department. This includes two 10-ft. by 15-ft. 6-in. raw mills with separator drying, and two 10- by 28-ft. finish mills. The Macdonald Engineering Co. made the general plant layout and was the general contractor.

**North American** The North American Cement Corp., in April, 1958, completed an addition to its Howes Cave finish-grinding department. A 9- by 30-ft., 1000-hp. Traylor 2-compartment mill was installed. At the Security, Md., plant an 8- by 30-ft., 800-hp. Traylor 2-compartment finish mill went into operation in July, 1958.

**Pacific Cement** Pacific Cement and Aggregates, Inc., late in 1958 completed the conversion of its Davenport, Calif., plant to natural gas. A 13-mile long pipeline was installed from Santa Cruz to the plant at a cost of $750,000. In case of a gas shortage, the fuel oil system can still be used.

**Penn Dixie** The Penn Dixie Cement Co. in 1958 installed an 11- by 25-ft. Nordberg 2-compartment mill in its plant at Petoskey, Mich.

**Permanente** The Permanente Cement Co. in 1958 installed a 1,250-hp. F. L. Smidth Unidan raw mill at its Permanente, Calif., plant. This operation now has a rated capacity of 8,500,000 bbl. of cement annually.

No definite plans have yet been made to go ahead with the construction of its proposed new plant at Scholle, N. M. Equipment planned for this 1,400,000-bbl., operation is to include a 12- by 450-ft. kiln and three mills. The necessary property has been purchased, and most of the engineering has been done.

**Phoenix** The American Cement Corp. in December, 1958, announced the formation of the Phoenix Cement Co., an Arizona-operated division which will produce and market cement from a new $16,000,000 plant under construction at Clarkdale, Ariz. Early in the year American awarded contracts for the new 1,500,000-bbl. plant. The general contract for design and construction was awarded to Fisher Contracting Co. Equipment will include two 10- by 12- by 350-ft. dry-process kilns and three 1,250-hp. ball mills with Symetro drives—all F. L. Smidth. Completion of the plant is scheduled for August, 1959. This plant is being built to supply 3,000,000 bbl. of cement over a five-year period for the Glen Canyon Dam and power plant to be built on the Colorado River in north-central Arizona. Cement silos, packinghouse, and tanks are being built by the Macdonald Engineering Co.

A 48- by 60-in. Allis-Chalmers primary crusher will be moved to Clarkdale from Riverside's Oro Grande, Calif., plant.

**Riverside** In February, 1958, the Riverside Cement Co., a division of the American Cement Corp., began work on a new $5,800,000 crushing and storage system for its Oro Grande, Calif., plant. Of this cost, $3,000,000 is being spent for machinery. Included is a 60-in. Allis-Chalmers gyratory crusher and two large hammermills. As the first step toward automatic control of this plant, a Thompson Ramo Wooldridge, Inc. RW-300 digital control electronic computer system has been purchased. This will guide the operation of the new rock blending and storage system and perform other functions. This entire installation is scheduled for completion early in 1959.

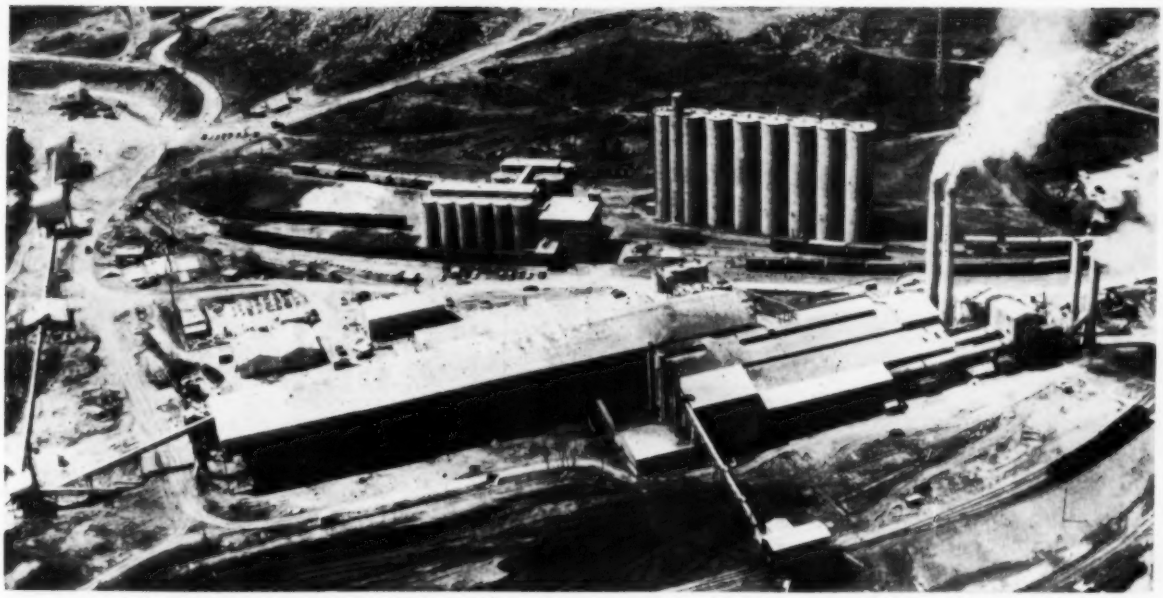
Late in 1958 Riverside placed orders for equipment totaling $3,600,000 for expanding its Oro Grande, Calif., plant. Included are two 12- by 10- by 310-ft. Allis-Chalmers kilns with 2-stage flash preheaters, Fuller horizontal grate coolers, and electrostatic dust precipitators. The kilns are rated at 1,200,000-bbl. each; they will replace old kilns of about one-half this capacity, and will increase capacity 20 percent, to more than 6,000,000-bbl. annually. The first kiln is expected to be in operation on April 1, and the second kiln on June 1, 1959.

This is a part of a long-range program which calls for an ultimate total of five new kilns. Five old kilns are being dismantled to provide space for future additional grinding facilities.

In December, 1958, Riverside announced the purchase of land and the completion of engineering plans for a white cement plant near the company's present Crestmore plant. Tentative orders for production equipment were placed with F. L. Smidth & Co.

Early in 1958 a new administration and laboratory building was completed at Crestmore at a cost of $661,500. This structure features a wide use of various types of concrete construction and concrete products.

**South Dakota** An expansion program at the South Dakota State Cement Plant, Rapid City, S. D., was completed early in 1958. Capacity was expanded 2,500 bbl. daily by the installation of a new 11- by 375-ft. kiln (replacing two old 10- by 150-ft. kilns) and a new raw-grinding circuit with an 8- by 15-ft. rod mill and an 8- by 22-ft. ball mill—all Allis-Chalmers. This work was done by the Mac-



An aerial view of the Knoxville (Tenn.) plant of Volunteer Portland Cement Company. More than 1,000,000 bbl. was added to the capacity of this plant with a new kiln, two mills, and related facilities.

donald Engineering Co. A new bulk-truck-loading installation was completed in July, 1958.

**Southern** The Southern Cement Co., a division of American-Marietta Co., early in 1958 completed an expansion program at its Roberta, Ala., plant which increased its capacity 25 percent. New Equipment included a 10-ft. 6-in. by 17-ft. Allis-Chalmers Preliminator mill.

**Southwestern** The Southwestern Portland Cement Co. made the news in 1958 with a kiln gas dust collector development which may have an important effect on future practice. This collector, a bag-type unit using silicone-treated glass cloth, is connected to one of the four kilns at the Victorville, Calif., plant. Earlier, two smaller kilns at the El Paso, Tex., plant had been similarly equipped.

Southwestern is reported to have begun construction late in 1958 on a new 1,250,000-bbl., $12,000,000 dry-process cement plant 12 miles west of Odessa, Tex. Equipment will include an 11-ft. 6-in. by 400-ft. F. L. Smidth kiln and two 11- by 17-ft. Allis-Chalmers mills. The Macdonald Engineering Co. is building 150,000-bbl. cement silos and two homogenizing installations. Completion is scheduled for 1959.

At its Fairborn, Ohio, plant Southwestern is reported to be installing a 13- by 20-ft. Allis-Chalmers dry-raw-grinding mill with a 2,000-hp. motor. This is said to be the largest single-compartment mill in this country.

**Standard Lime** The Standard Lime & Cement Co. early in 1958 completed some improvements to its Martinsburg, W. Va., plant. Included was a 10- by 32-ft., 1,250-hp. 2-compartment Traylor finish mill, and a 130,000-bbl. cement storage, built by the Macdonald Engineering Co.

In 1956 this company made a 1-kiln, 1,400,000-bbl. addition to its plant, and a similar addition is now under way, scheduled for completion probably late in 1959. Equipment will include a 12- by 450-ft. wet process kiln, a 9- by 13-ft. 8-in. preliminary raw mill, a 10- by 32-ft., 1,250-hp., 2-compartment secondary raw mill, and an 11-ft. 6-in. by 17-ft. 8-in. finish mill—all Traylor.

**Universal Atlas** The Universal Atlas Cement Co. early in 1958 completed an expansion program at its Hudson, N. Y., plant which increased its capacity one-third. Equipment installed included a 12- by 350-ft. kiln and three 8-ft. 6-in. by 30-ft. Unidan mills — all F. L. Smidth. Facilities for the manufacture of portland slag cement were also installed.

Later in the year a program was completed at the Leeds, Ala., plant which increased its capacity substantially. Equipment added included a finish-grinding mill and supporting facilities for the production of portland slag cements. This work was done by Rust Eng. Co.

**Volunteer** The Volunteer Portland Cement Co., Knoxville, Tenn., in 1958 completed a program of expansion and improvement which increased its capacity 38 percent to about 3,000,000 bbl. annually. Included were new primary crushing, secondary crushing, and screening departments, a 10- by 300-ft. kiln, two 8- by 14-ft. raw mills—all Allis-Chalmers—a slurry basin, storage buildings, etc. All this work was designed and built by Macdonald Eng. Co.

**Whitehall** The Whitehall Cement Co. is reported to have built a new raw mill and packhouse at its Cementon, Pa., plant. This is a part of a program to replace all its older facilities by 1962. The new equipment includes two 11-ft. 6-in. by 17-ft. 8-in., 1,250-hp. Traylor raw-grinding mills, with drying in the separator.

# Major materials enjoy continuing high demand

By BUREN C. HEROD

**New records, and then a slowed rate of climb**—although still upward—that has been the picture presented by major segments of the aggregates industries for the last two years. Highlights of that picture were developed from observations of authoritative industry sources, including leaders of several national associations, coupled with information received during the closing weeks of 1958 in the annual PIT AND QUARRY survey of producers—a compilation of data at the "grass roots" level.

**Both primary groups**—sand and gravel and crushed stone—established new production peaks in 1957; and according to estimates of those best informed, output of these materials, although at a slower rate, nevertheless continued upward in 1958. This, of course, reflects the close relationship to construction which alone bolstered the lagging national economy in the recent business recession.

Agricultural limestone dropped only slightly in 1957, due probably more to the weather factor than any other, but remained close to the level of the preceding year. In 1958 it should hold its own, according to industry spokesmen. Slag maintained its high level of 1956 during the following year, but declined in 1958 in conformity with the cur-

Survey data is broken down to these major divisions, except for the southern area, which is separated into Southeast and Southwest.

tailed activity in steel. A leading industry authority looks for slag to come back strongly in 1959, along with steel, and quite possibly to hit the 1956 record of 35,000,000 tons.

**Several thousand producers,** representing a nationwide cross section, were mailed PIT AND QUARRY survey questionnaires for this annual survey. As in the procedure followed for several years, detailed information was requested covering the years 1956, 1957, and 1958. Experience has shown that data determined from this longer period presents a more accurate summary than a single year "one-shot" compilation.

Producers' combined figures were then compared with the latest Bureau of Mines statistics available (1957), and were also examined in the light of comments received from their various association staffs. Expectations for 1959 were also requested, in addition to the detailed operating data and general reactions to such factors as the road program.

Last year it was estimated here that sand and gravel production for 1957 would run within 2 percent of the preceding year—based on the information provided by answering operators.

**The actual output?** 627,000,000 tons, as reported by the Bureau of Mines, or less than 1 percent above 1956. However, it was good enough to set another production record for sand and gravel.

**What will 1958 show?** The producers of sand and gravel indicate that the industry will parallel construction growth, and they expect to register a 2 to 5 per cent gain over 1957. That pattern has been projected into the coming year by producers' comments. However, the upward surge is expected to be considerably steeper.

**Crushed stone operators** rolled up their sleeves, and in lieu of the 5 percent gain in 1957 estimated here last year, actually jumped 10 percent to a new record of 439,000,000 tons. (The latter figure is exclusive of stone used in production of cement and lime). Approximately 90 percent was produced by commercial operations.

**A more gradual climb is indicated for 1958** on the basis of estimates provided on the questionnaires. Perhaps slightly over 450,000,000 tons are indicated, which would represent a gain of about 3 percent.

A general view of the Miles Company's Auburn, Wash., plant where a crushing installation was provided to take care of an accumulation of plus 2-in. gravel oversize. The screen (left) receives oversize round gravel, and operates in closed circuit with two crushers via the two conveyors (foreground).

**1959 should be an even better year,** the crushed stone producers say. Approximately two-thirds are expecting gains that will range to 25 percent. In all sections of the country, those who displayed such expectations outnumbered their less optimistic colleagues by from 2 to nearly 20 to 1. This is bulwarked by more than one-third who plan to expand various phases, modernize, or build new plants to meet expected demands.

As in the past, survey questionnaires returned were tabulated by the PIT AND QUARRY staff according to geographic sectors that are closely allied with market areas delineated by the U. S. Department of Commerce.

Along with production data for each of three years, an overall operating picture was drawn by section on the basis of answers to questions on hourly capacities, wages, selling prices, etc. In accordance with our long-standing policy, the great number of returns received are treated and handled in confidence, so that no individual figures are divulged, but are used solely in developing regional and national averages.

## SAND AND GRAVEL

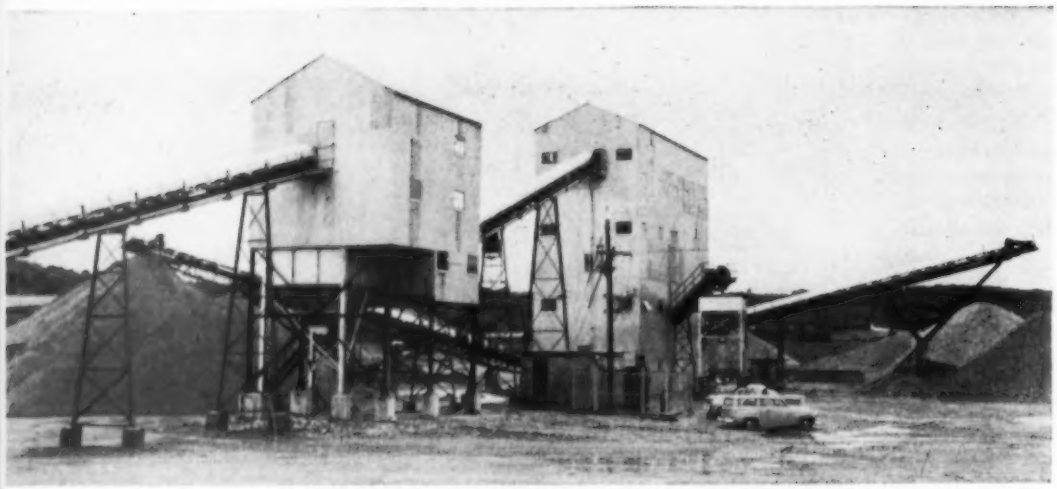
The producers' average estimate, on a nationwide basis, of a 2 to 5 percent gain over 1957 would indicate that total production for the last 12 months was in the neighborhood of 635,000,000 tons, of which 85 to 90 percent would be of commercial origin.

**Optimism for 1959 prospects** is evident on the part of nearly 40 percent of the answering operators. These, plus those who expect at least the same high level of activity as last year far outnumber the extremely few who anticipate a slackening.

The generally optimistic attitude appears logical in view of the increase in new construction during the last 6 months and the estimates of a further 7 percent gain (about 4 percent actually put in place) for new construction during 1959. Another substantial factor is the increase in actual construction in the highway program.

In view of the above, 1959 production could well reach 650,000,000 tons or better for commercial and non-commercial operations combined.

Comparison of activity in 1958 with that of the preceding year shows that all sections of the country experienced higher production rates. Further, the majority of operators in all sections expect, as noted previously, that the upward trend will continue this year.



This 500-t.p.h. sand and gravel plant of Ohio Gravel Company at Newtown, Ohio, produces scrubbed, washed, round materials, and is the newest of three sand-and-gravel plants on the same property. Oversize from a scalper in the structure at the left is trucked to another plant for crushing. The building at the right houses a scrubber, scalping tank, rewashing and classifying screws, and finish screens.

**Hourly Capacity** On the basis of weighted regional averages, the mean national hourly capacity was raised last year by slightly more than 12 percent. The average determined was approximately 200 t.p.h. In the Southwest and West, the rates remained about the same as in the preceding year, while the Northeast gained 8, the North Central 10, and the Southwest 18 percent.

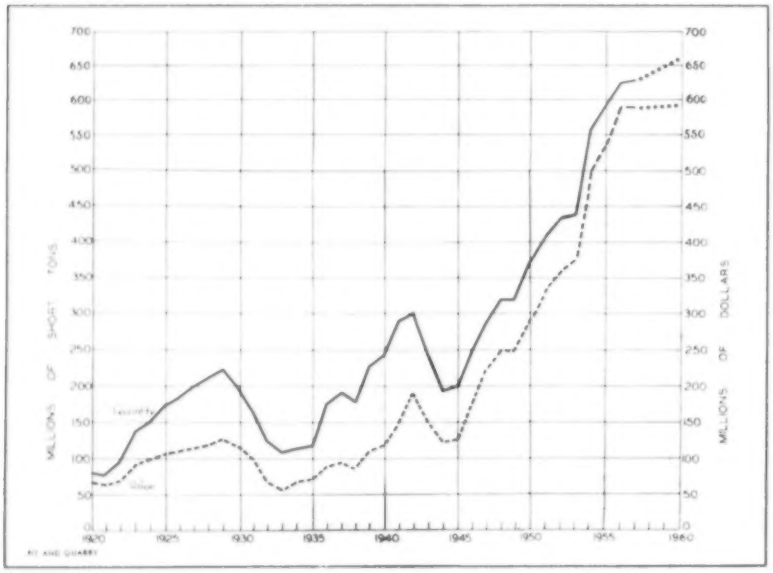
**Selling Price** **These rose slightly during 1958**—per operators' figures. The average selling price of sand was 3 percent higher, and that of gravel 2 percent higher than quotations in 1957. In contrast to last year's survey, in which it appeared that prices had dipped on either or both sand and gravel in some sections, all regions reported a slight increase for each material during 1958.

The gains by region were as follows: Northeast—sand 2 percent, gravel 3 percent; Southeast—sand 4 percent, gravel 3 percent; North Central—sand 2 percent, gravel 1 percent; Southwest—sand 2 percent, gravel 5 percent; and West—sand 7 percent, gravel 4 percent.

**Wages** **Labor costs, like selling prices, were higher,** producers note—but rose at an appreciably greater rate. On a nationwide basis, the average hourly wage was approximately $1.94—5 percent above the 1957 average.

The West again led the country with the highest hourly rate—currently $2.35, or an increase of 6 percent. By expected order of rank the remaining sections showed these increases: Northeast—5 percent to $2.14; North Central—5 percent to $1.90; Southeast—5 percent to $1.53; and Southwest—8 percent to $1.50.

Production of sand and gravel in the United States, 1920-1958, including both commercial and non-commercial operations. Data through 1957 is adapted from the latest Bureau of Mines publications. Figures for 1958 represent estimates made on the basis of replies to the annual Pit and Quarry questionnaire survey.




**Operating Data** Details on equipment, methods, and operating periods were also supplied by producers returning our questionnaires. From these data, other national and regional averages on various factors were developed.

With respect to operating periods, the nationwide average again was 11 months out of the year. Plants located in areas of less moderate weather variations, *i.e.*, in the North Central and Northeast states, averaged 9 and 10 months.

Nearly 50 percent of the operations utilize dry-pit excavating methods, another 24 percent have wet pits, and about one-fifth of the answering producers have dredges. Nearly one-third employ a portable unit in their operations. Currently, the greater proportion of the latter appear to be utilized in the Northeast, North Central, and Southwest states. However, the West is very

close behind, while the Southwest has a substantially lower average.

Significantly, over 50 percent of the plants surveyed have crushers in their processing lines, and nearly 50 percent of the gravel processed is crushed. Slightly more than 10 percent also incorporate grinding equipment.

**Outlook** **The estimate of 650,000,000 tons** to be produced in 1959 draws support from the joint Department of Commerce-Department of Labor projection of a 7 percent gain (dollar volume) in total new construction this year. This would still indicate, as noted earlier, a healthy 4 percent increase in actual construction in place. Being right at the source, the majority of the producers look for a related increase in their business.

**More than lip service** is being given to this optimism, since at least one-third of the producers indicate plans for expansion, modernization, and, in many instances, complete new plants. The addition of pit and processing equipment, or revision of existing units in those phases is contemplated by more than 30 percent. Actually, 10 percent of the operators indicate that they have already got under way on such programs.

**What does it mean in dollars and cents?** Conservatively, and on a national average, $35,000 has been earmarked by each of those producers who has such plans on the drawing board or in progress.

With respect to the highway program, about 15 percent of the operators indicate that this will have a direct bearing on them in the near future, to the extent that they will have to expand capacity by about one-third. While a substatial number indicated last year that this construction would have no effect on their activities, a good many have revised their opinions during the past 12 months, and currently only about 35 percent expect it to play no part.

**1957 Statistics** The 627,000,000-ton production reported to the Bureau of Mines for 1957 was valued at $594,000,000—a slight decrease in unit value from 1956.

Commercial production totalled 463,000,000 short tons, or about 75 percent. Approximately 80 percent was consumed by building and paving. The decline in home building that started during the year was offset by greater consumption in highway, dam, and airfield construction.

Truck transportation continued gradually to pull ahead of all other means of moving these materials. It accounted for 81 percent, a gain of 1 percent over the preceding year. Rail shipments also gained 1 percent to a total of 14 percent.

**N.S.G.A. Survey** As reviewed in the July, 1958, issue of PIT AND QUARRY, p. 179, the National Sand and Gravel Association's latest survey covered production and value of sand and gravel for 1957. The report presented data developed from questionnaires returned by 564 companies (U. S. and Canadian) operating 976 plants, plus 40 additional member operations on which a certain amount of information was already available.

## CRUSHED STONE

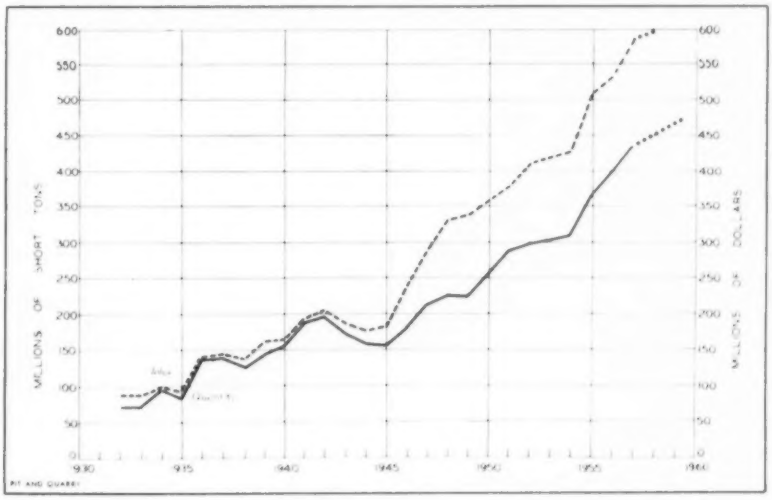
**1957 proved even better** than estimated here last year, on the basis of producers' figures furnished in the preceding survey. Final Bureau of Mines data for 1957 show a production of 439,000,000 tons of crushed stone (exclusive of that used for cement and lime). While the operators themselves had indicated that they anticipated a 5 percent improvement over the 1956 record, they actually achieved a 10 percent gain.

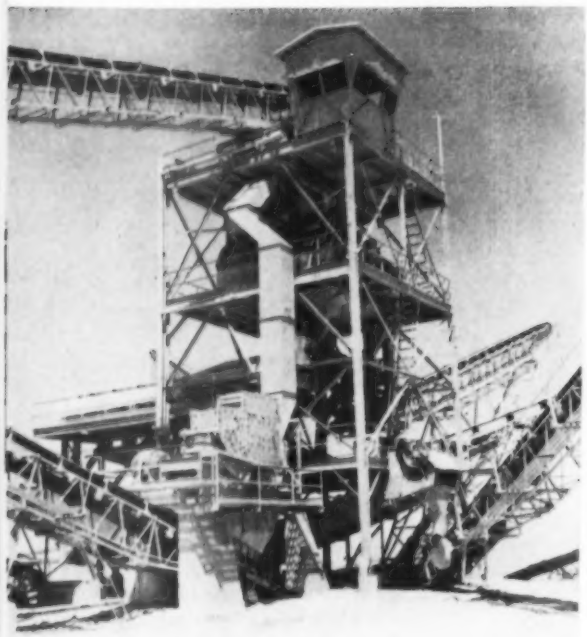
**The pace continued last year** according to the reports received in our latest survey; and while progress was at a somewhat slower rate, it appears that another peak has been established at 450,000,000 tons, or slightly better.

**What's ahead for 1959?** Over half of the operators in each section expect that the current year will, at the very least, parallel the high levels of 1958. On a national basis, two-thirds of those answering the survey anticipate increases averaging 25 percent. This is a considerable jump from the more conservative reactions of preceding years (in which actual output was consistently greater than expected), and it seems possible that the industry may record a peak of more than 475,000,000 tons (exclusive of stone for cement and lime).

**Hourly Capacity** A gain of about 10 percent was again realized during the last year in plant hourly capacities. There were no sections in which this had remained static according to averages developed from producers' figures. Greatest increases were established in the Southwest and West, followed by the North Central, Northeast, and Southeast sections, in that order. Nationally, the average appears to be nearly 225 t.p.h.

Production of stone (including crushed, broken, and dimension) in the United States, 1932-1958 (includes both commercial and non-commercial, but excludes that used in manufacture of cement and lime). Figures through 1957 are based on Bureau of Mines data; those for 1958 are developed from replies to the latest questionnaire survey.





A view of the unusual screening tower in the plant of Rockdale Stone Co., a few miles south of Miami, Fla. At top is the control station, in the foreground the secondary crusher, and behind the latter the stone sand scalping tank and washing screws.

**Selling Price** **No appreciable increase,** on a nation-wide average, appeared in crushed stone prices last year per data received. At $1.81 and $1.74, respectively, the Northeast and West sections had the highest average prices. The line has been held closely on prices for over two years. It was evident in the survey of last year that a rise of less than 1 percent took place during 1957.

**Wages** **Another rise was evident in labor costs,** as shown by survey returns. The $1.79 national average for 1958 represents a 6 percent jump over the preceding year, approximately the same as experienced by the sand and gravel people.

The West again led with an average of $2.55—an increase of 5 percent. However, the greatest percent of gain was found in the Southwest, where wages rose an average of 12 percent to $1.52. Averages for the other sections, as determined from the survey, were: Northeast—up 5 percent to $1.76; Southeast—also up 5 percent to $1.50; and North Central—up 6 percent to $1.80.

**Outlook** **Further business improvement in 1959** is anticipated by the majority of crushed stone operators. Nearly two-thirds are expecting increases of up to 25 percent. Only 4 percent look for a drop in demand.

This optimism is, as in the case of the sand and gravel returns, not a Pollyanna attitude. At least one-fourth of those answering are planning to expand to meet greater demands, and nearly 10 percent say they will build new plants. More than 60 percent have indicated plans to acquire new quarry or processing equipment, or to revamp existing facilities toward greater and more efficient production. These programs will involve an average cost well above that of 1958.

**Money talks, it is said**—and the producers have indicated that the programs noted above will involve (on a nation-wide average) an expenditure of $80,000 per company involved.

Comments made by the operators concerning the highway program indicate that, although a substantial percentage expect it to have no effect on their activities, nearly one-third anticipate that they will have to expand their facilities to meet greater demands, and nearly 20 percent have already taken steps in that direction.

**1957 Statistics** **Another production record** was established with the 439,000,000-ton output of 1957 (stone for cement and lime not included) of which more than 50 percent was destined for concrete and roadstone applications. Approximately 90 percent of the latter was produced by commercial operators. Limestone and dolomite constituted 72 percent of the total.

## AGRICULTURAL LIMESTONE

Virtually an identical rate of consumption has been evident for this commodity during the last three years. According to industry authorities, the usage in 1958 may prove to be slightly below that of 1957 — when the application of 22,100,000 tons was recorded—but it will probably remain very close to that level. This is regarded as being due more to adverse weather conditions than to any other single factor. ACP figures have remained constant, and apparently have had no bearing either way.

The 1957 tonnage was only about 100,000 tons greater than that of 1956. However, the recent leveling follows an encouraging gain during 1956 and 1955 from the low point experienced in 1954.

On the basis of numbers, the 41 states reporting agstone usage are split down the middle—21 have reported increases ranging from less than 1 percent to 27 percent, while the other 20 have indicated decreases of less than 1 up to 49 percent. However, the greatest drop was reported in South Dakota, which only used 244 tons. Montana led in percent of increase (200 percent) with 583 tons, but the runner-up—Minnesota—had a 27 percent gain with 630,000 tons.

**The potential for 1959,** according to a leading industry spokesman, appears presently to parallel the 1958 activity. Again, weather factors, particularly in the Spring and Fall, will probably have the most critical effect.

Six of the top ten consuming states registered gains during 1957. This included Illinois, the consistent leader, with a total of 3,035,657 tons. Indiana was again second and had gained slightly with 2,570,000 tons. The other top states by order of rank, are Missouri, Ohio, Wisconsin, Iowa, Kentucky, Pennsylvania, New York, and Tennessee.

## SLAG

**Continuing high demand** was enjoyed by slag processors during 1957, according to the latest complete annual figures developed cooperatively by the Bureau of Mines, and the National Slag Association. A decline in home building, plus a decrease in cement production, failed to impede industry sales, which amounted to 34,841,000 tons —only 400,000 tons below the record set in the preceding year. These sales were valued at $52,000,000, however, which was an all-time high.

The major product, screened air-cooled slag, constituted 73 percent of total output. Output of the remainder consisted of unscreened air-cooled, 6 percent; granulated, 13 percent; and expanded, 8 percent (identical proportions to those in the preceding year).

Of the major category, 92 percent was used in highway and airport construction (other than portland cement or bituminous), bituminus construction (all types), railroad ballast, portland cement concrete construction, concrete masonry manufacture, and miscellaneous uses, in that order.

The greater proportion of unscreened air-cooled material was used in highway and airport construction, also; hydraulic cements and highway construction, and concrete masonry accounted for the greater part of granulated and expanded slag, respectively.

Consistently accurate estimates have been furnished in past years by the industry authority co-operating in our review. According to this source, the industry may record a drop of nearly 15 percent in 1958—due to curtailed blast-furnace operations.

**Prospects for 1959 are good,** it is noted, since demand remains high, and material improvement in steel operations is expected. On that basis, it has been estimated that a supply of 35,000,000 tons (or better) will again be available this year.

## LIGHTWEIGHT AGGREGATE

A companion survey of concrete masonry producers appearing in our sister publication (see MODERN CONCRETE, Jan., 1959, pp. 42) indicates that more than 50 percent of concrete masonry output in 1958 incorporated lightweight aggregates. This is comparable to recent preceding years.

An average gain of about 7 percent in total production of masonry units was reported, and on that basis, lightweight aggregate found its way into more than 1,000,000,000 units (8-in. equivalents). Nearly 70 percent of all answering producers in the concrete masonry survey indicate that some proporation of their output utilized these materials. On that basis, approximately the same quantity was used in 1958 as in the preceding year—about 17,000,000 cu. yd.

**A gain in 1959** is expected by nearly two-thirds of these operators, with estimates averaging 18 percent. If realized, total consumption of lightweight aggregates will approach 19,000,000 cu. yd.

**Expanded Slag** Still close to the 1956 record, expanded slag production in 1957 again totalled more than 2,900,000 tons. About 96 percent was used in the manufacture of lightweight concrete masonry, and was valued at $8,048,276—5 percent above 1956. Approximately 3 percent was used in lightweight concrete.

**Vermiculite** A drop of 4 percent in tonnage (but an increase of 2 percent in value) was recorded by crude vermiculite production in 1957, according to the latest Bureau of Mines annual data. The total of 184,000 tons, after preparation for exfoliation, was valued at $2,600,000. This is the lowest figure on tonnage established by the industry for at least 5 years.

Exfoliated vermiculite amounted to 161,000 short tons, valued at $9,910,000—2 percent increases in both quantity and value over 1956.

Most of the exfoliated material was marketed for use in building plaster, lightweight concrete, and loose fill insulation.

**Perlite** Still climbing steeply throughout 1957, production of crude perlite that year totalled 422,346 tons. Screened and sized crude (sold and used) amounted to nearly 302,000 tons—a 3 percent drop from the preceding year. Expanded perlite sales also dropped, by 7 percent, to 245,433 tons.

All of the crude was produced in 14 mines for processing in 83 expanding plants. The Bureau of Mines analysis of usage shows this breakdown: building plaster aggregate—69 percent; concrete aggregate—15 percent; fillers—3 percent; filter aids—1 percent; and miscellaneous uses—12 percent.

The two 160-ft. kilns in the new expanded shale plant built by Material Service Corporation near Ottawa, Ill. Operating design provided for a pre-sized kiln feed from which approximately 1,500 cu. yd. per day of expanded material with an impervious outer layer produced.

# Most Nonmetallics Reflect Economic Fluctuations of 1957-58

By BUREN C. HEROD

THE latest available yearly data on nonmetallic minerals (exclusive of the heavy and lightweight aggregates, cement, and agricultural limestone, which are reported on in other sections of our review and forecast) reflect their close kinship to the various components of our country's heavy industries, and emulate in most instances the slackening that led to the recession, as well as the stirring of new industrial vigor in recent months.

Information in the final U. S. Bureau of Mines reports for 1957, and, in the case of some commodities, for some quarters of the year just past, show that in the last 18 months there was generally a downward slant to production and sales—but one that cannot be interpreted as a headlong, precipitous slide.

In the following report, the largest tonnage of nonmetallics on which there is data subsequent to that of our last annual review (January, 1958) are detailed in terms of production and in some cases related general background information. Accompanying charts give a perspective to the activity of certain commodities over a four- or five-year period, as we'l. In all cases, the final 1957 figures, at least, are presented.

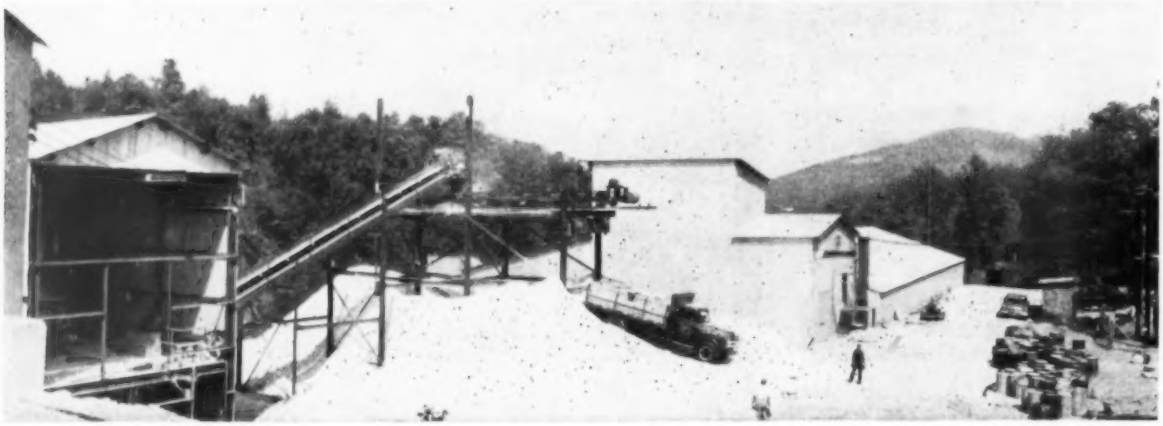
Among the leaders of the minerals described, lime—with its close relationship to the steel industry, and gypsum—closely allied to residential, commercial and institutional construction—furnish prime examples of the economic situation found in most nonmetals.

Paralleling steel, a major consumer, lime dropped in accordance with the 50 to 60 percent of capacity at which steel was operating, and a resurgence in the last quarter probably will not bring it up beyond 7,700,000 tons for the entire year.

Activity in most areas of construction was mirrored by domestic crude gypsum production, which dropped in the first half of 1957, compared with the first six months of 1956, and then turned around to start an upward climb again between January and June of 1958. As noted later, the latter situation should be enhanced by greater activity in portland cement production during the last half of the year.

With respect to some of the other minerals, the decline in fluorspar shipments was directly related to the metallurgical industries (aluminum, steel) whose demands dropped steadily from the second quarter of 1957.

The Lawson-United Feldspar & Minerals Company mill near Minpro, N.C., is described as having the largest capacity in the U.S. for feldspar froth flotation.



Phosphate, after going all out to re-establish stocks depleted during the Florida strike, recorded a decrease of 11 percent in 1957, but would seem to be approaching a more nearly normal operating pattern.

**Lime** **Sales of open-market lime** through last October were down 17 percent from the comparable period of 1957. This is based on latest available Bureau of Mines figures, which show that 6,000,000 tons were sold in the first 10 months of 1957, as compared with about 7,600,000 during that part of the preceding year. According to industry sources, the final picture for last year will show approximately a 7,700,000-ton output.

**Quicklime** represents 66 percent of the total open-market sales for January to August, and hydrate the balance. While the tonnage of the latter was almost identical to that of the earlier year (for the first 10 months), it is proportionately greater, *i.e.*, the drop in sales was in quicklime, primarily.

**Chemical and other industrial usage** tops all other categories, and for the period discussed, accounted for 63 percent of the total. Others in rank by percent of use are refractory, 20 percent; building, 14 percent; and agricultural, 2 percent. In the case of building, refractory, and chemical consumption, small increases were indicated, while in the other category, a small decrease was experienced.

Excerpts from 1957 statistics, published by the Bureau of Mines, are presented in an accompanying summary table. Producer reports to the Bureau show a total production of 10,274,506 tons—a drop of 3 percent from the all-time record of 1957. This decrease was attributable to the 5 percent drop in sales of open-market lime (from 9,000,000 in 1956 to 8,500,000 in 1957). By type, quicklime represented 58 percent, hydrate 20 percent, and dead-burned dolomite 22 percent of material sold. These are approximately the same proportions as evidenced in the preceding year.

By use, all major categories displayed small to moderate percentage decreases, as follows: agricultural, 17; building, 8; refractory, 7; and chemical, less than 1 percent.

**What's ahead for 1959?** Industry spokesmen indicate that the coming year should record considerable improvement over 1958. However, it is expected that total production will fall short of the figure reached in 1957. Increased tonnage is anticipated in all four categories, and it seems logical to look for a total gain of 10 to 12 percent—or total sales of about 8,500,000 tons.

**Gypsum** **A 20 percent gain in domestic crude production** was attained during the first six months of 1958, in comparison with the same period of 1957. As reported to the Bureau of Mines, the 1958 figure was 5,238,336 short tons.

This represents almost an exact reversal of the situation that presented itself for the first half of 1957—a period that represented a 19 percent drop from the first six months of 1956. Calcined gypsum, however, dropped 2 percent in 1958 from the comparable production period of the preceding year, and amounted to 3,683,243 short tons.

As estimated in this report a year ago, the final production figures reported for 1957 were, at 9,194,580 short tons, 11 percent below the tonnage of 1956. After bottoming at a three-year low in the first quarter, production for the next two quarters of 1957 rose steadily, and as of the end of September the total exceeded that of the corresponding period of the previous year.

In view of the activity for the first half of 1958, compared with the same part of 1957, it seems quite probable that industry production will recoup to a level within 10 percent of the 1955 high. This is bolstered by the gains estimated for new construction during 1958.

For the first six months of the last year, lath and wallboard (the two largest use categories) showed some interesting developments. The former recorded a very definite slowing of the downward trend that started early in 1957, and the latter registered an 8 percent gain. In another primary area, that of portland cement retarder, the six-month total is down only 2 percent, and should be reversed in the light of higher portland cement production and shipments recorded the greater part of the year.

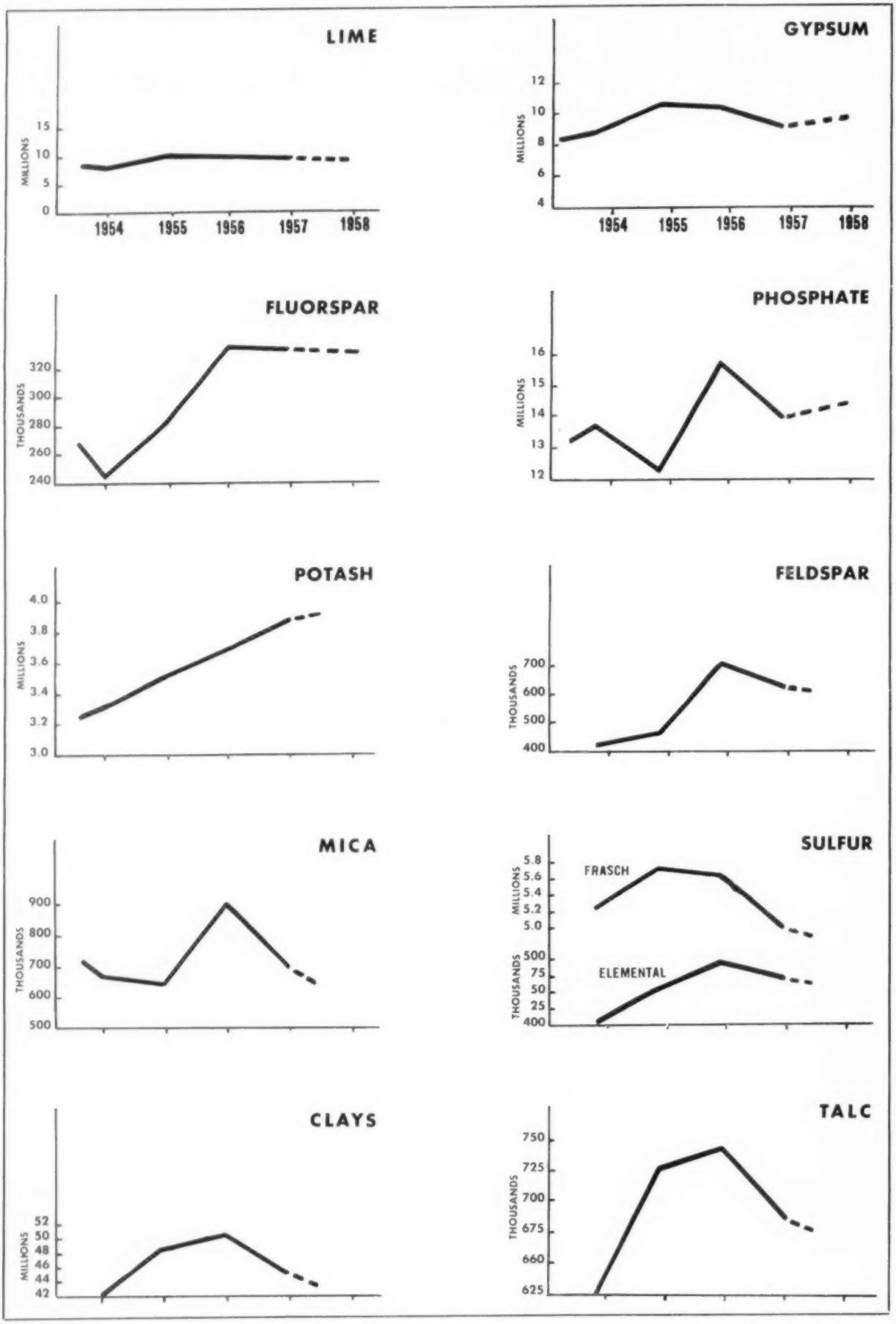
Probably without question, the industry will maintain its crude productive level during 1959 well above the 8,000,000-ton level, which it passed several years ago; and the major use categories noted above will remain considerably higher than 7,000,000 sq. ft.

Activity recorded in new construction last year is undoubtedly mirrored in the data on gypsum production, and the 7 percent upward change forecast for construction in 1959 can be expected to draw gypsum figures back toward earlier high levels.

**Fluorspar** While shipments of finished fluorspar during the first two quarters of 1958 were, at 135,000-plus tons, slightly above

**Lime Sold or Used By U. S. Producers 1956-57**

| | Quicklime | Hydrate | 1957 Total | 1956 |
|---|---|---|---|---|
| Agricultural: | | | | |
| Sold | 69,382 | 139,218 | 208,600 | 251,906 |
| Used | | | | 129 |
| | | | 208,600 | 252,035 |
| Building: | | | | |
| Sold | 98,529 | 939,160 | 1,037,689 | 1,133,383 |
| Used | 43,545 | 20,076 | 63,621 | 69,622 |
| | | | 1,101,310 | 1,203,005 |
| Chemical, Industrial: | | | | |
| Sold | 4,250,964 | 787,170 | 5,038,134 | 5,216,884 |
| Used | 1,479,940 | 195,094 | 1,675,034 | 1,481,463 |
| | | | 6,713,168 | 6,698,347 |
| Refractory: | | | | |
| Sold | | | 2,231,709 | 2,401,966 |
| Used | | | 19,719 | 21,943 |
| | | | 2,251,428 | 2,423,909 |
| | | | 10,274,506 | 10,577,296 |


LIME
MILLIONS
15
10
5
0
1954
1955
1956
1957
1958
GYPSUM
MILLIONS
12
10
8
6
4
1954
1955
1956
1957
1958
FLUORSPAR
THOUSANDS
320
300
280
260
240
PHOSPHATE
MILLIONS
16
15
14
13
12
POTASH
MILLIONS
4.0
3.8
3.6
3.4
3.2
3.0
FELDSPAR
THOUSANDS
700
600
500
400
MICA
THOUSANDS
900
800
700
600
500
SULFUR
FRASCH
MILLIONS
5.8
5.6
5.4
5.2
5.0
ELEMENTAL
THOUSANDS
500
75
50
25
400
CLAYS
MILLIONS
52
50
48
46
44
42
TALC
THOUSANDS
750
725
700
675
660
625

Opposite page: Tonnage recorded since 1954 by several of the major nonmetallics.

the quantity shipped during the first six months of 1957, consumers' stocks are high, and consumption data indicate that the slight decrease registered in 1957 will probably continue that pattern through 1958. This is based on the fact that the two major use categories—acid and metallurgical—have led a steady drop in consumption since the second quarter of 1957.

According to the final 1957 data compiled by the Bureau of Mines, shipments of finished fluorspar were down (at 328,900 tons) only 800 tons from the 1956 high. Industrial consumption registered a new high of nearly 645,000 tons, however. The latter was realized despite a sharp drop recorded in the latter part of the year, a drop which, as noted above, continued into 1958.

**For the sixth consecutive year,** imports—largely from Mexico—for domestic consumption exceeded domestic shipments to the same markets. In this country, Illinois is still the largest producing state.

**Phosphate** **Sales up, production down—** such was the picture in 1957 for the phosphate rock industry. While marketable production decreased 11 percent from 1956 to about 14,000,000 long tons (4,356,000 long tons in $P_2O_5$ content) in 1957, sales went up 3 percent to a new record of 14,600,000 long tons with a $P_2O_5$ content of 4,564,000 tons.

Interestingly enough, the drop in 1957 from the peak year of 1956 was virtually identical to that experienced during 1955 from the former peak year of 1954. However, the latter drop was due almost entirely to the strike in the Florida fields, while the more recent decline is more closely related to a leveling of production and demand.

**Sans the sharp production climb during 1956** when stocks were being re-established, the industry would undoubtedly have recorded a normal gradual growth pattern against which the recent production decrease would not have registered as strikingly.

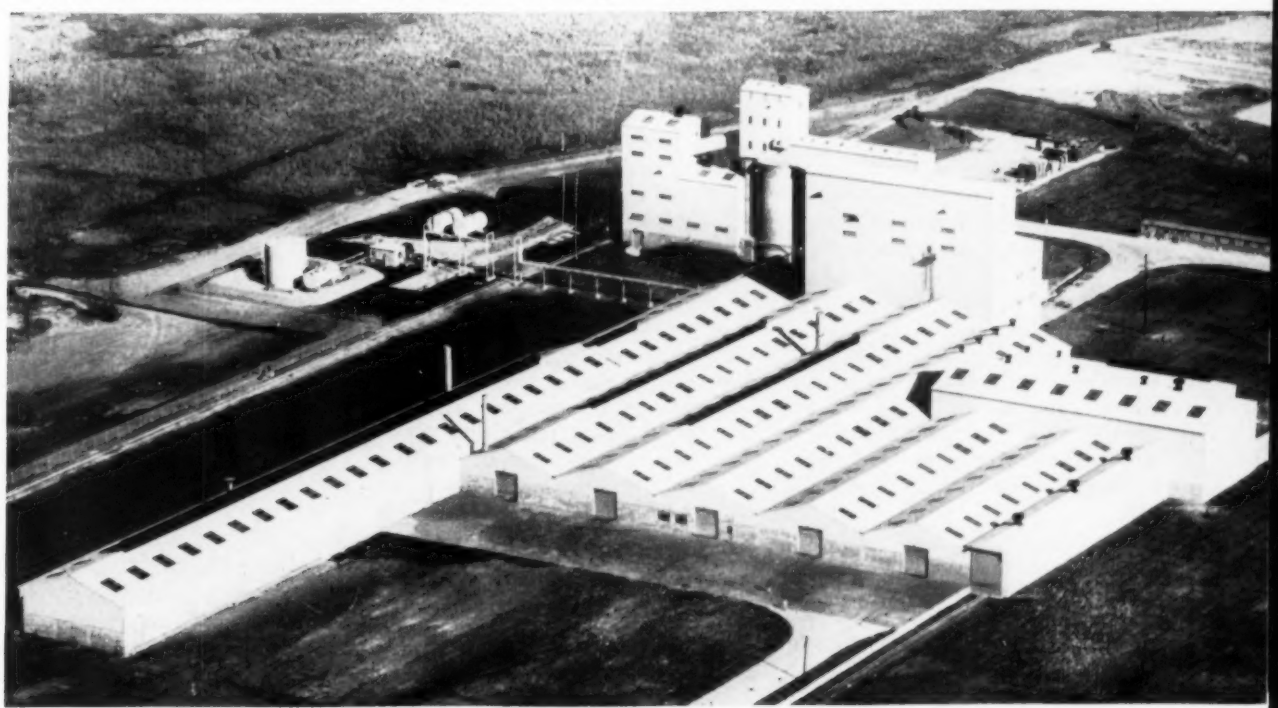
**Potash** Of all the miscellaneous nonmetallics reviewed in these pages, potash alone has recorded a steady unspectacular growth for the last several years. Another new peak was reached in 1957, when 3,840,000 tons (2,266,000 tons $K_2O$ equivalent) of marketable potassium salts were produced. This represented a gain of slightly more than 4 percent over the previous year—almost a constant rate of increase since 1954.

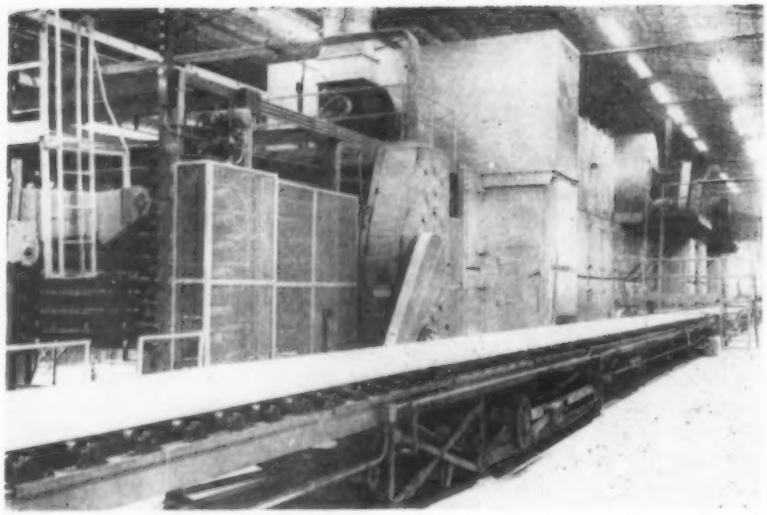
**Sales approximately paralleled production,** and gained about 2 percent over 1956, while apparent consumption was almost identical to that in the preceding year. Further, apparent consumption was about 92 percent of marketable sales output.

At $79,628,000 (value at plant), total producers' sales represented an average value of just under $22 on the tonnage sold. Although imports picked up 1 percent during the year, exports jumped 18 percent. Two-thirds of the latter was destined for Japan.

**Feldspar** **A drop of 12 percent** from the peak of 1956 was recorded in production of crude feldspar during 1957. Value also declined, by 10 percent. The respective figures (for the latter year) are 612,000 long tons and $5,439,209.

This basic refractories plant at Hammond, Ind., is the fifth such facility built by Harbison-Walker in the last decade.





This photograph taken in the new gypsum products plant of Fibreboard Paper Products Corporation near Florence, Colo., shows the setting, cutting, and drying operations in gypsum wallboard production. Raw materials handling and automatic control are outstanding features of the facility.

Both, however, are well above the levels reached in any recent years.

The quantity and value of ground feldspar sold by merchant mills (in the U. S.) also decreased in 1957 from the preceding year. At 634,000 short tons, the quantity was down 17 percent, while the 20 percent decrease in value was reflected in sales of $7,451,427.

There were 12 producing states with 23 active mills in 1957—in 1956 there were 14 states with 25 mills. Of the three main consuming industries—glass, pottery, and enamel—only the latter registered an increase over the preceding year.

**Mica** The quantity of block and film mica fabricated during the first half of 1958, the latest period for which the Bureau of Mines has tabulated reports, was approximately 1,400,000 lb.—an 18 percent drop from the last half of 1957.

About 62 percent of all qualities of the material was consumed in electronic applications—a category that accounts for virtually the same amount every year. One-fourth of all mica fabricated in the U. S. was processed by plants in North Carolina.

According to the final statistics for 1957, the quantity of domestic sheet mica sold or used dropped 22 percent, compared with 1956. Scrap and flake sold to grinders or used by them increased 7 percent, to reach the second-highest level on record. Sales of ground mica increased 6 percent in tonnage.

**Clays** In 1957, the latest year for which final figures are available, these decreases were recorded by types (tonnage): kaolin—3 percent; ball—11 percent; bentonite—8 percent; and fire—8 percent. In total, production dropped 10 percent to 46,000,000 tons.

Based on a consumption of 125,000 tons or more, many of the major use categories registered drops. Along with heavy clay products, drilling mud, absorbents, etc., cement dropped 3, refractories 7, and lightweight aggregates 9 percent

Major uses of kaolins remained virtually unchanged from preceding periods, *i.e.*, the paper, rubber, refractory, and pottery industries were principal consumers. Paper alone accounted for 54 percent (1,186,000 short tons) of the total kaolin output.

The 8 percent drop in quantity of bentonite sold or used was accompanied by a 3 percent drop in value from the all-time highs recorded during 1956. Of the total tonnage, 78 percent was used by the foundry and petroleum industries. Rotary drilling mud accounted for 38 percent (557,000 tons) of the latter, and foundry sand bond, 26 percent (377,000 tons).

Decreased activity in refractory and construction industries is considered responsible for most of the 8 percent drop in fire clay sales and use in 1957. The latter period recorded 10,805,000 short tons.

**Talc** Sharp declines in domestic production and sales of talc, soapstone, and pyrophyllite during 1957 are ascribed to decreased demands for talc in ceramic products. An average of 7 percent less mine production was recorded for the three materials (talc and soapstone were 8 percent less, pyrophyllite 4 percent), in the 684,000 tons reported.

Sales declined in all major uses (for talc and soapstone) except paper, which remained practically unchanged. The latter, plus ceramics, paints, insecticides, roofing, rubber, and asphalt filler, accounted for 84 percent of producers' sales of talc and soapstone in 1957. This compares with 88 percent in 1956, and 87 percent in 1955.

Insecticides, ceramics, refractories, and paints consumed 64 percent of pyrophyllite sales. The greatest decrease recorded was in paints.

**Boron** The 1957 production of boron minerals and compounds increased 5 percent to a total of more than 585,000 short tons ($B_2O_3$ content of 286,000 tons). This reversed a drop from the peak of 924,000 tons in 1955. The $B_2O_3$ content of the latter was 293,000 tons.

**Sulfur** According to the final Bureau of Mines data for 1957, the total domestic production of sulfur amounted to 7,003,888 long tons. Of this amount, about 5,580,000 long tons, or 80 percent, was Frasch sulfur and 7 percent recovered elemental sulfur. These represented a 15 percent decrease and a 10 percent gain, respectively.

Domestic consumption in all forms, including imports of Canadian pyrites and of sulfur from Mexico (a country that has emerged as a major producer), was 3 percent below the 1956 level.

**Graphite** An all-time high was attained in world production of natural graphite during 1957. However, domestic consumption increased only 2 percent—to 41,000 tons—which was 4,000 tons short of the record set in 1955.

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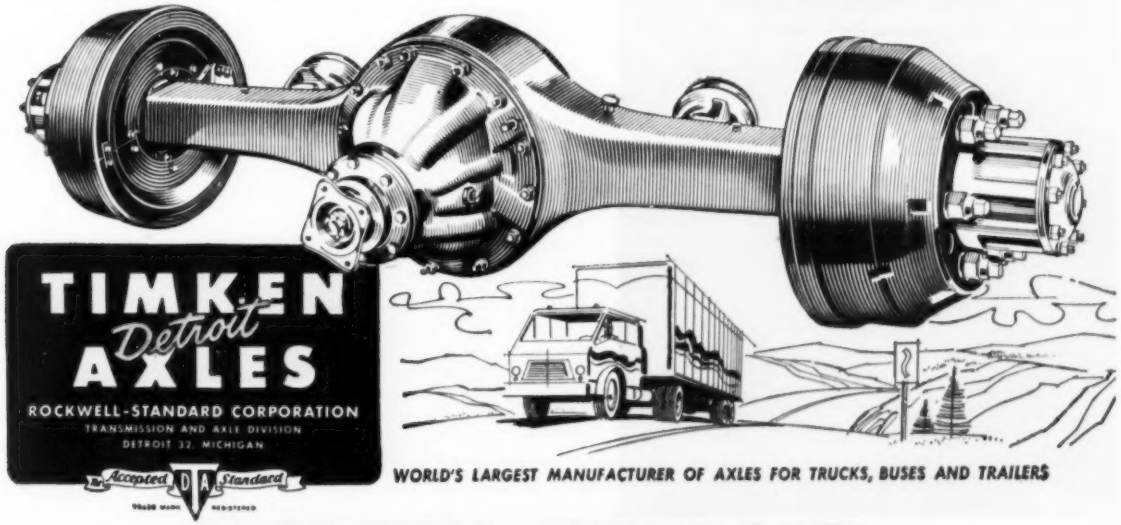


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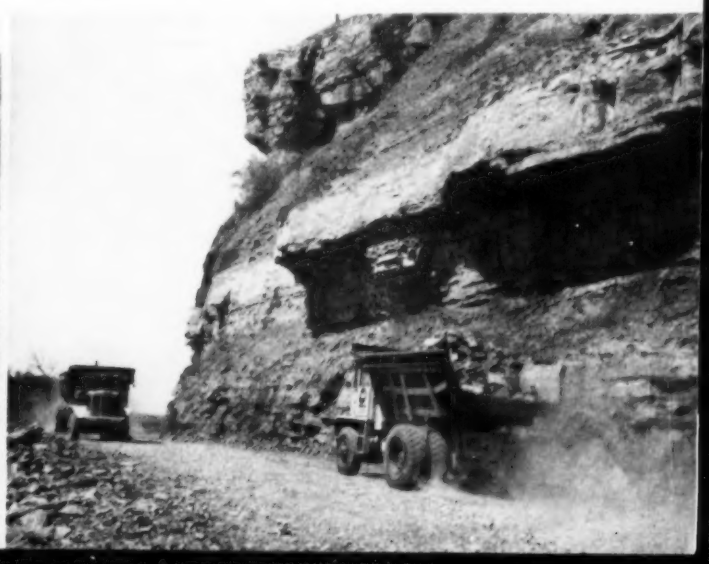
**Merritt-Chapman and Scott Corporation** has added thirty more "95" Payhaulers to their Niagara Power project equipment spread. Now, the M-C and S Payhauler fleet totals 62 units—largest in the world! On St. Lawrence Seaway, huge Glen Canyon dam, and Niagara Power Project, M-C and S have proved rock-lugging, grade-beating Payhauler performance—and confirmed their satisfaction with repeat orders.



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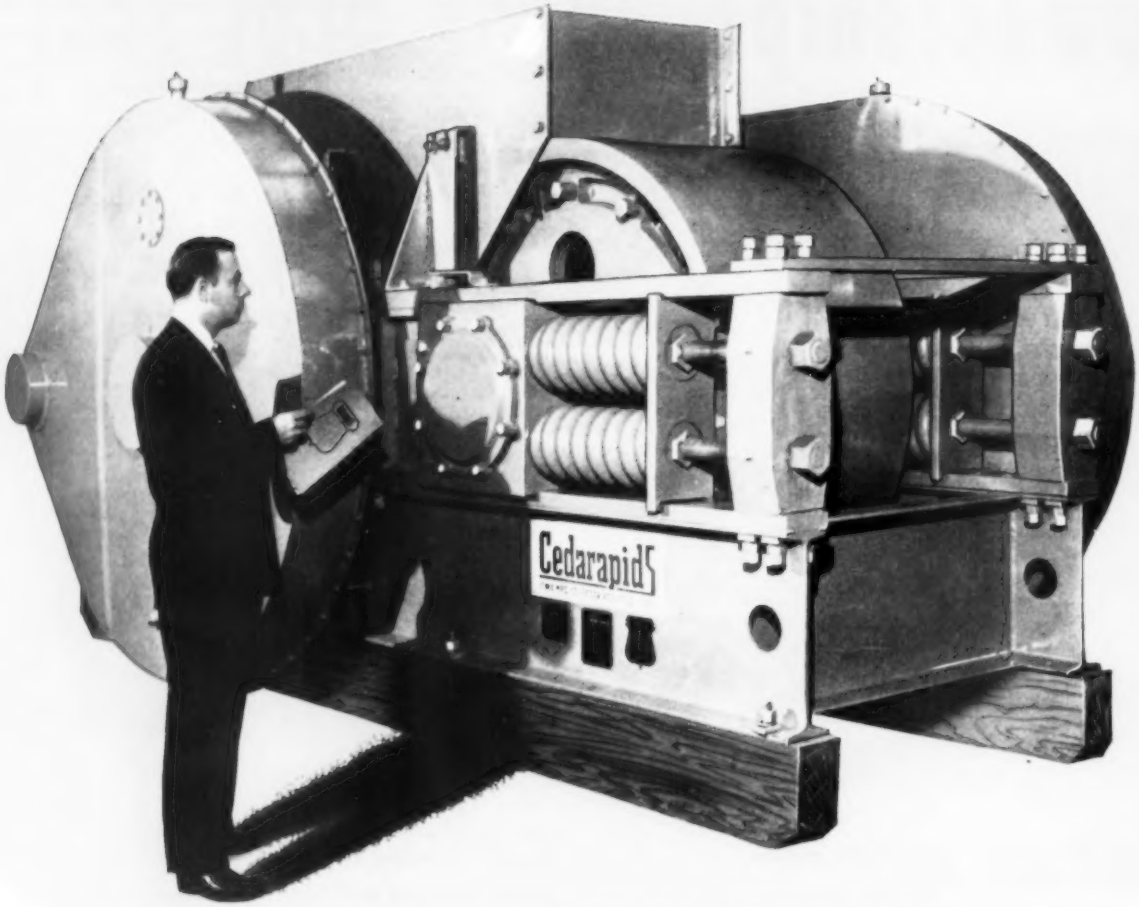



## These big-performance features tell you why

**Big Secondary Production** of material from ¼" to 5" pours steadily through this big roll crusher with its 30" wide rolls, to keep aggregate plants operating at a highly profitable pace. The big 55" diameter rolls nip into larger size feed material—as a result, the primary crusher can be opened to increase over-all plant capacity.

**Low Maintenance** assures big profit. Every feature of the 5530 Roll Crusher is engineered to give steady high production day-in and day-out for month after month. To take the stress of crushing, bearings are designed for extremely heavy-duty service. Extra-heavy countershaft assures steady, high capacity even under surge loads. Rugged frame is engineered with high-strength steel I-beams and welded crossbeams to hold countershaft bearings, gear and pinion, and stationary roll bearings in rigid alignment. You get high-tonnage output day after day from the Roll Crusher that's built to take punishment!

**Extra Power,** with large, heavier-than-average flywheels turning at high speed on an extra-heavy-duty counter shaft, easily handles surge loads due to uneven feeding . . . and gives this Cedarapids Roll Crusher the most economical power consumption rate per ton of material crushed.

**More Efficient Feeding** also steps up production. Material is dropped *between* the rolls. Its speed of falling permits maximum penetration into the crushing area, allowing faster feeding and resultant greater hourly output. A special feed box with an angle divider spreads material across the full width of the rolls to utilize the entire crushing area and prevent uneven wear on the roll shells.

**Other job-proved features** include: Patented shear plates that protect the crusher from uncrushable material without resorting to numerous heavy springs; extra-rugged spider cores for roll shells; easy shim adjustment for rolls; a wide range of roll shell surfaces including smooth, corrugated, or beaded.

Cedarapids
Built by IOWA

**IOWA MANUFACTURING COMPANY** Cedar Rapids, Iowa, U.S.A.

# 540,000 gallons of water used daily by sand and gravel plant!

## MARLOW supplies water to meet full requirements

To supply water for their Pioneer and Simplicity washing and screening plant, the Nello L. Teer Company, Erwin, N. C., uses a Marlow 6G3S pump powered by an International-Harvester engine. The pump, located on the bank of a river, carries the water up a steep hill to the plant, a half mile away. On continuous operation, the pump delivers 54,000 gallons per hour, but *can* handle up to 66,000 gallons per hour during peak periods!

Fred Byrd, Superintendent of Operations for the Teer Company, said that the plant has a capacity of 1,400 tons per 10 hour day and uses 540,000 gallons of water. The plant produces sand and gravel up to 1¼ inches in diameter and is used on their own construction jobs as well as sold commercially to other construction firms. Serving the washing and screening plant is an Eagle Screw, Barber Green Conveyor Belts and a Telsmith Gravel Crusher.

Mr. Byrd is well pleased with the performance of his Marlow pump. He says it runs 10 hours a day without interruptions and gives him all the water he needs to meet his requirements.

Let Marlow help you solve your pumping problem. Write today for information on the complete line of A.G.C. rated pumps and famous Marlow Mud Hogs for handling muddy and trash-laden water. Ask for Bulletin CO-4 and the name of your nearest Marlow dealer.

Marlow PUMPS

DIVISION OF

**BELL & GOSSETT CO.**

Midland Park, New Jersey

Longview, Texas • Morton Grove, Illinois

7-294

# Sam Pulaski

## (1833- )

Sam Pulaski is a wise old gent,
smart as any the Lord ever sent.
His job is the same day after day—
blasting down mountains the same old way.

But there's a story to this old guy
on why he'll use Austin 'til he die.
It started back before you and me,
as far back as eighteen thirty-three.

That was the year when Sam was the one
chosen to see the canal was done.
Canal was complete 'cept for a hill
bigger'n McKinley and steeper still.

Though Sam took the job he felt quite sad,
knew he needed more strength'n twenty had.
But Sam had heart and this was his tune,
"Get me some help and get it here soon."

As fate would be, Austin caught the cry
and filled his wagon near to the sky
with explosives aplenty, fuse galore
to trample trouble that lay before.

First went the mountain almost as fast
as Austin took to make up the blast.
Then boulders were made stones and stones sand
when Sam and Austin went through the land.

The canal was done in less'n a day
and still flows freely or so some say.
But this to Sam and his roughneck friend
was just the beginning, not the end.

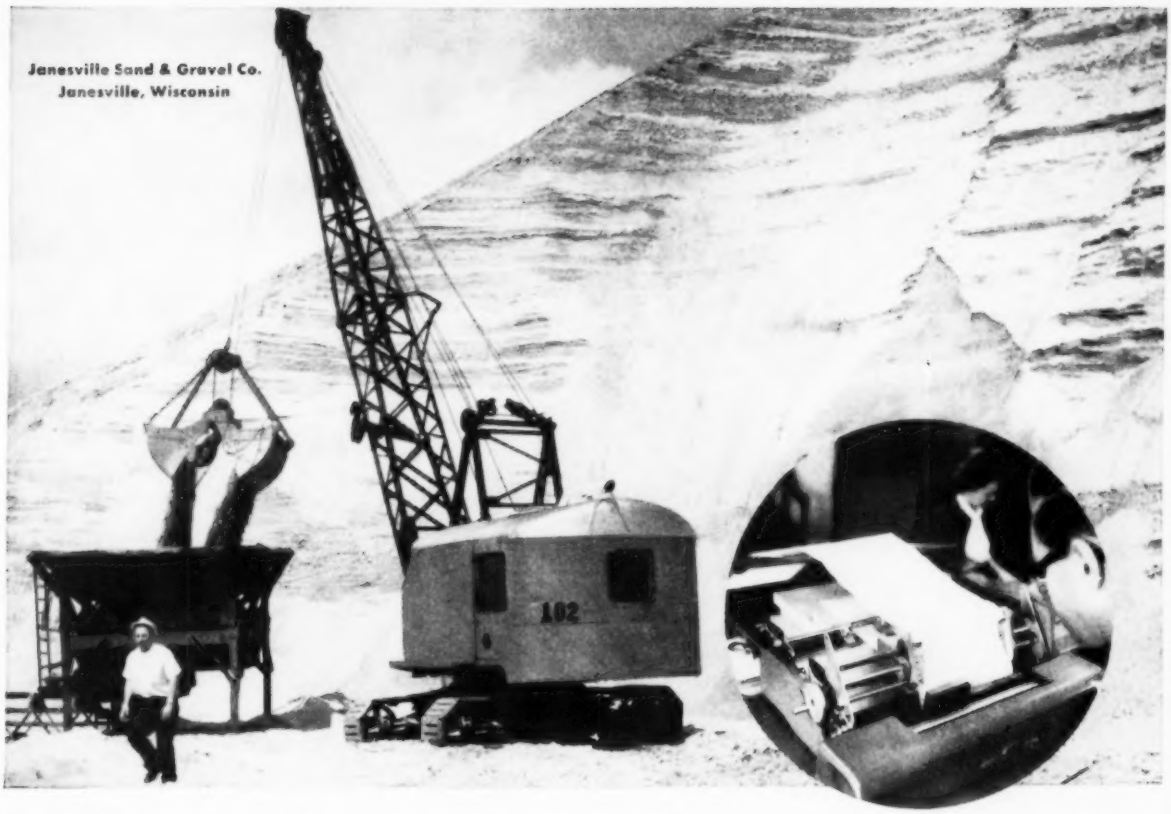
To blast, to prime, to clip or to drill,
for every need Pulaski must fill
he's called on Austin since thirty-three,
quite a record I think you'll agree.

* * *

Now if you quarry or work a mine,
you must use products in our line.
So why not follow Sam's tested lead—
buy from Austin . . . everything you need.

USED IN 1833 AUSTIN & EVER SINCE

**AUSTIN POWDER COMPANY**
CLEVELAND 13, OHIO




# "IBM machine keeps maintenance records– Cities Service sets them!"

**Janesville Sand & Gravel's IBM maintenance reports reveal superiority of Cities Service C-300 Motor Oil for all engines**

Detailed and accurate records are one of the prime reasons behind the growth of Janesville Sand & Gravel to its present production of nearly 40,000 yards of concrete a year.

So it's not surprising to find Janesville pioneering the use of IBM equipment to keep absolutely precise maintenance records. Nor is it surprising that these records reveal exceptional performance for all 112 pieces of motorized equipment using Cities Service C-300 Motor Oil.

Probably the most versatile motor oil available, Cities Service C-300 is a "work-horse" lubricant ideally suited to gasolene engines in severe service and heavy duty diesels. Janesville finds it a particularly desirable motor oil because of its ability to provide maximum protection under heavy-load, low temperature start-stop operation.

If you'd like to simplify oil inventory . . . if you're anxious to arrest carbon, sludge, varnish, corrosion and the other profit robbers so familiar to start-stop operation . . . get the facts about Cities Service C-300 Motor Oil. Talk with a Cities Service Lubrication Engineer from the nearest office. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N.Y.

**Radio Dispatched Trucks** are typical of Janesville's efficient methods. Like all other motorized equipment, the trucks are lubricated with Cities Service C-300 Motor Oil, and the resulting outstanding performance is a matter of IBM record.

**5-Million Cement Blocks A Year** are manufactured at the Janesville plant. IBM records show excellent production efficiency. The firm has been noted for accurate records since its founding in 1907.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



Enter 107 on card, page 165

Their aim: *to double production without increasing overall loading costs.*
Solution: *a new 4 yard Michigan Tractor Shovel. Its regular time-record:*

# 60 SECONDS TO LOAD

At the Oneglia & Gervasini pit near Woodbury, Connecticut, they are loading trucks in *half the time* it ever took before!

Overall loading *costs*, nevertheless, have stayed practically the same!

Reason for this production-doubling, cost-cutting record is the new 4 yard Model 275A Michigan Tractor Shovel shown on these pages. This unit has *1½ times the bucket capacity* heretofore available in a mobile, rubber-tired Tractor Shovel. Its speed of loading has been remarkable . . .

### Heaps small trucks in 20 seconds, 20 yard semi-trailers in 2 minutes

Working mostly with 10 yard, 10 wheel trucks in this 1,000-ton-per-day traprock quarry, the Model 275A has established an average load cycle of only 60 to 70 seconds *—from first pass into a stockpile 'til loaded truck pulls away.* "On our busy days," reports Supt Theodore Tietz, "we move 10-yard trucks out of our pit at the rate of one per minute." Smaller trucks generally require only 20 to 30 seconds (one pass) to load. Twenty to 24 yard semi-trailers usually take 2 to 2½ minutes (four or five passes). These records average all grades of crushed stone, all kinds of weather. In one typical time-and-motion study, for example, the Model 275A regularly dug into a half-frozen stockpile of 1½ inch stone and backed off with a heaping 4 yard payload *in only 7 seconds!*

### Carries 5 ton load up 35° slope

High-speed loading like this has been *only one* of Michigan's important achievements. The 262 hp rig has taken over some tough stockpiling chores too. Like moving two-inch stone to the top of a 100 ft high stockpile. The last 60 feet of ramp to piletop here is pitched *at a 35-degree angle*—yet the Michigan regularly carries a heaping *5 ton load* up it. Back-dragging on the return trip accurately spreads and compacts a 4 to 5 inch layer of gravel to keep the ramp graded for continuous dumping.

"I particularly like Michigan's bucket action. Even in frozen stone, you can push in and get a full load without straining"—Operator Bob Faccin.

| SPECIFICATIONS | | |
|---|---|---|
| | Model 275A | Model 375A |
| Bucket capacity (standard SAE ratings) | 4 yards | 6 yards |
| Lifting capacity | 22,000 lbs | 30,000 lbs |
| Weight | 45,000 lbs | 61,000 lbs |
| Speeds (forward and reverse) | 0-28 mph | 0-25 mph |

Seven other standard Michigan Tractor Shovel models, 16 cubic feet to 2¼ cubic yards (SAE bucket ratings), are available.

"This big Michigan effectively dresses stone stockpiles. Its 10'6" wide bucket makes it an excellent snow plow. It even does well on such tough dozer jobs as shovel cleanup and stripping quarry top prior to drilling"—Supt Theodore Tietz.

# EACH 10 YARD TRUCK

### Moves 11 ton boulders

Michigan handles "super-lifting" assignments too that smaller Tractor Shovels couldn't touch. Rip-rap, for example. Some of the traprock boulders uncovered in the Oneglia-Gervasini pit weigh 10 or 11 tons! The Michigan makes short work of stockpiling or loading them into trucks. "In fact," says Supt Tietz, "the Michigan frequently has moved rocks our quarry shovel couldn't handle!"

### Model 275A easy to maintain

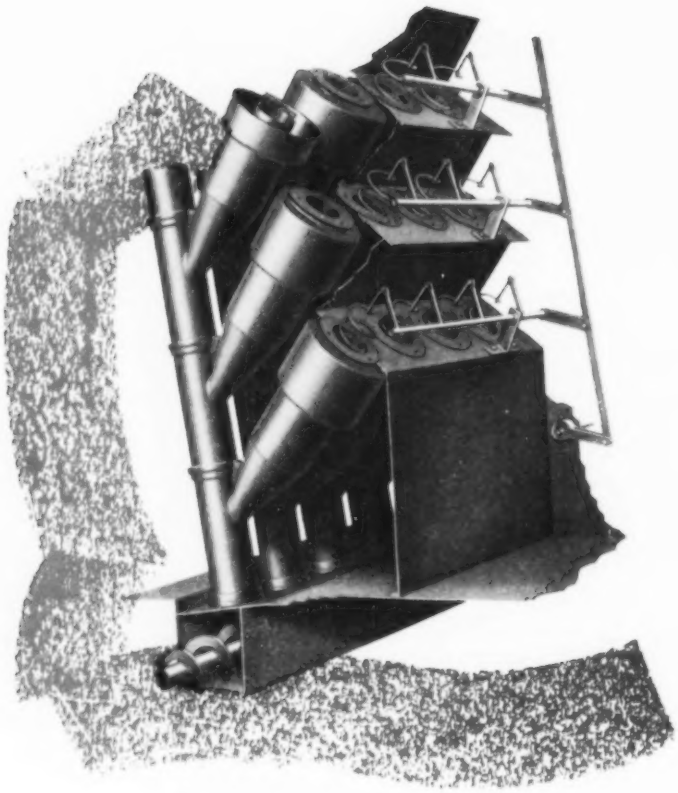
One reason O & G's Michigan performs so well on all these tough jobs is its all-Clark power train . . . Clark torque converter, power-shift transmission and planetary wheel drive axles . . . all matched to each other . . . all designed to the same general specifications as the Clark components which have proved so efficient in the 9,000 smaller Michigan Tractor Shovels sold since their introduction in 1954. Also, some credit for Michigan's good performance here should be given the simple, systematic maintenance procedure followed. About half an hour a day takes care of lubrication as well as oil, water and torque converter oil check. Once a week engine oil and air filters are changed. "It's an easy machine to service," says Operator Bob Faccin, "and we feel the time is well spent."

If you load trucks, we honestly believe *your* time will be well spent on a study of the big new Michigans. Both the big 4 yard Model 275A, described here, and the bigger 6 yard Model 375A are now proved by over a year in the field. Both are in regular production and readily available. See your local Michigan Distributor for details on performance . . . price . . . and delivery!

CLARK® EQUIPMENT

Michigan is a registered trade-mark of
**CLARK EQUIPMENT COMPANY**
**Construction Machinery Division**
**2479 Pipestone Road**
**Benton Harbor 18, Michigan**
**In Canada: Canadian Clark, Ltd.**
**St. Thomas, Ontario**

*Enter 108 on card, page 165*



## Throwing away valuable potassium in your cement dust?

## . . . then a PARACLONE will pay for itself quickly!

A Paraclone automatic self-cleaning dust collector can quickly pay for its installation by recovery of valuable by-products, such as potassium, from cement dust.

A Paraclone can be specifically designed to separate your cement dust into particle size fractions. Followed by an electrostatic precipitator the combination is highly efficient for the recovery of valuable potassium, which is found in much higher percentages in the *smaller sized* particles of some cement dusts.

Paraclone has many advantages over ordinary mechanical dust collectors. It is highly resistant to abrasion and is insensitive to variations in gas load. The automatic self-cleaning device of Paraclone avoids costly down time for cleaning, even with normally troublesome cement dust.

We suggest you send us a sample of your cement dust. We will analyze it for particle size and potassium content.

The results of these tests will enable us to determine what collection efficiency you may expect for recovery of product or elimination of air pollution, as well as the economic feasibility for you to recover potassium.

★ Cutaway showing Paraclone's patented automatic cleaning device and one piece cast iron cell and discharge pipe construction.

Green

THE GREEN FUEL ECONOMIZER CO., INC.

BEACON 3, NEW YORK



Enter 111 on card, page 165 →

Four Michigan Tractor Dozer models are now available . . . this 165 hp size, 262 hp, 335 hp, 600 hp.

# Rock quarry cuts repair bills 60%

*Company records show rubber-tire Michigan Dozer also has reduced cleanup time 50% over track-type machines*

"Like many other stone quarries, we sure used to be unhappy about track maintenance," says G. E. McLeer, vice president, Ohio River Stone Co, Prospect, Kentucky. "Rails alone used to cost us hundreds of dollars per year for replacement . . . plus several man-days of labor per change. No more. Our rubber-mounted Model 180 Michigan Tractor Dozer has run a year now. Naturally, no track problems . . . and no tire replacement either. Looks like original treads will last another year easily. Then, we expect to recap . . . and repeat recap. The savings should be at least 60%."

### Excellent performance of Michigan Tractor Shovel echoed in Dozer

"Track wear wasn't the only reason we changed over," McLeer continues. "We chose the Michigan *Dozer* because of our excellent experience with our three Model 175A Michigan Tractor *Shovels*. Their all-Clark power trains really stand up. The Dozer's power train does, too. In its year of operation, the dozer has lost maybe 25 working hours—but that's all!

### ¼ mile move takes 2 minutes

"Production was another of our aims. The Michigan gets around much faster than the crawlers. In emergencies, for instance, we drive it the 20 miles between our two main quarries under its own power. After all, it's got a top speed of 27 mph, with good visibility, good brakes and power steering.

"Moves in any one quarry aren't nearly as long, but they're virtually continuous. Typical ¼-mile trip takes only 2 minutes . . . half to a third of crawler time. And, of course, the saved minutes go into productive work so necessary with increasing production demands.

"Our time studies show the rubber-tired Dozer *moves more material* on almost all jobs too — 50 per cent more when dressing stockpiles than a track-type machine. The reason? The Michigan moves *just as much* with its 10-foot dozer blade *per load*, yet *moves more loads per hour*. Speed advantage is mostly in faster backup, faster shifting. You don't have to stop to change speeds; just move a short-throw lever. No foot-clutching is necessary, ever."

### Jack-of-all-jobs

Michigan Model 180 Tractor Dozer is "work-horse" of the main Derby Company quarry. Unit:

1. Takes about ½ hour to clean quarry floor after each shot.
2. Three to four times a day cleans up around two shovels: one on rock, one on stripping. Total work time, about 1½ hours per day.
3. Once a day, cleans spillage from 2 miles of truck roads.
4. Cleans spillage under crushers and aggregate bins.
5. Shapes nine rock stockpiles.
6. Cleans rock and dirt after stripping and before drilling.

### Distributor service praised

"If any of our Michigans go down, we call our distributor (Emmett C. Watson Co of Louisville), and his men come right out," says McLeer. "Very seldom do we have to wait for parts and we get good warranty service."

You can get the same fast, low-cost help from *your* Michigan Distributor. Their good service is an important reason for the sale of over 8,000 Michigan rubber-tire units since 1954. Call them soon . . . they're good friends to know.

**CLARK EQUIPMENT COMPANY**
**Construction Machinery Division**
**2479 Pipestone Road,**
**Benton Harbor 4, Michigan**
**In Canada: Canadian Clark, Ltd.,**
**St. Thomas, Ontario**

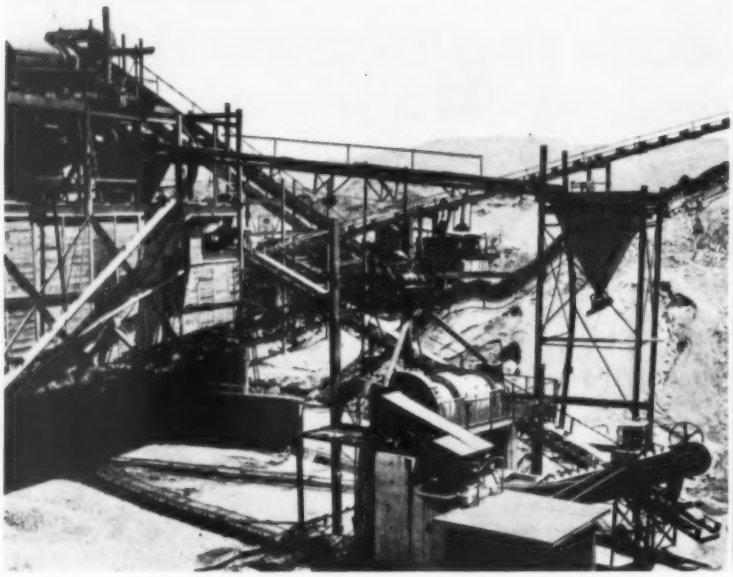
Michigan is a registered trade mark of

**CLARK® EQUIPMENT**

# ECONOMIZE

# with built-in REOPCO*

**Marcy Mills have a reputation for being the best built grinding mills available...that's why *they cost less to own* save you money every day for years.**



5' x 10' Marcy Center Peripheral Discharge Rod Mill, by grinding a waste portion of the avaliable material, enables company to meet rigid sand specifications. No replacement parts have been required in the first two years of operation... typical of Marcy's dependable, economical operation.

*Reduced operating costs.

***Check Marcy Performance Records with our Engineers***

*Manufacturing Division*

**THE MINE AND SMELTER SUPPLY CO.**

| DENVER 16 | NEW YORK 17 | SALT LAKE CITY 1 | EL PASO |
|---|---|---|---|
| 3800 RACE STREET | 122 E. 42nd STREET | 121 W. 2nd S. | P. O. BOX 1162 |

**LICENSED MANUFACTURERS AND SALES AGENTS** in Canada, Australia, Sweden, England, South Africa

**SALES AGENTS** in Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the U.S.

A section of Hudson's Multiwall design facilities, the largest and most experienced in this country.

# THE ODDS are 9 to 1

you can increase your sales through a Design Improvement

FIELD REPORT

TO: B.D.

RE: New Bag Design for [redacted]

Brought the new multiwall design to their PA, Mr. [redacted] today. He was so pleased with it that he took it right up to Mr. [redacted], their president, who was tickled with it. He especially liked the idea of simplifying the design, thus reducing his costs. At the same time, he agreed that we had greatly improved appearance, strengthened identification, and brought out his true selling points in much better way. He now considers the bag an "ace salesman", and praised the PA for getting such a fine design at no cost to his company.

*Hudson Bags increase your sales — cut your costs!*

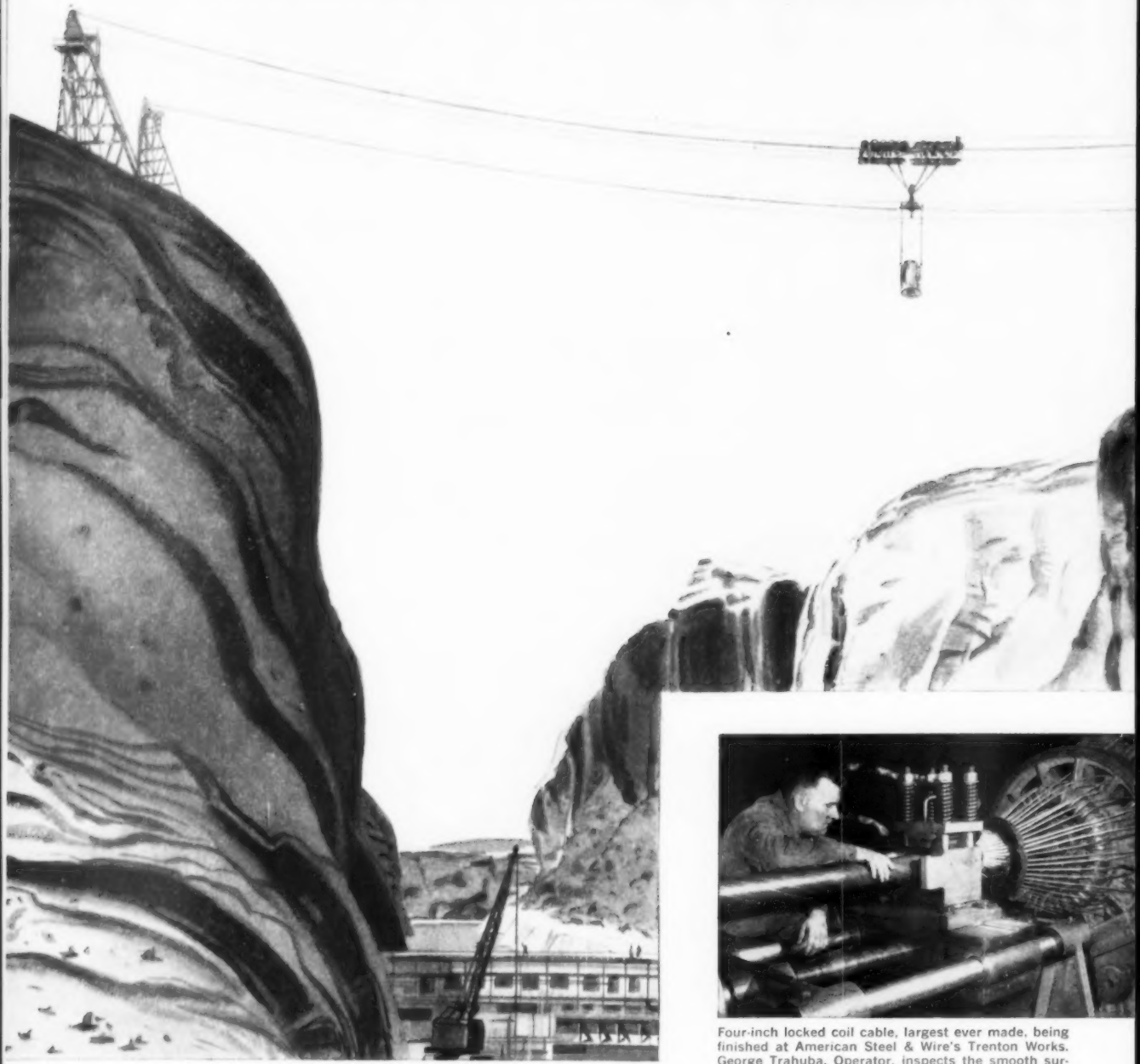
**HUDSON MULTIWALLS**

*for further information write:*

**HUDSON PULP & PAPER CORP.**
477 Madison Avenue • New York 22, N. Y.

Plants at Pine Bluff, Ark. • Palatka, Fla. • Wellsburg, W. Va.

# Superhighways in the sky



Artist's conception of how the two Tiger Brand Cableways will be used in the construction of Glen Canyon Dam on the upper Colorado River. The higher cableway can pass over the lower one. Both can service all areas of the construction site.

## GLEN CANYON DAM

700 FEET HIGH—1400 FEET LONG

Second highest dam in the United States, located on the Colorado River in northeastern Arizona.

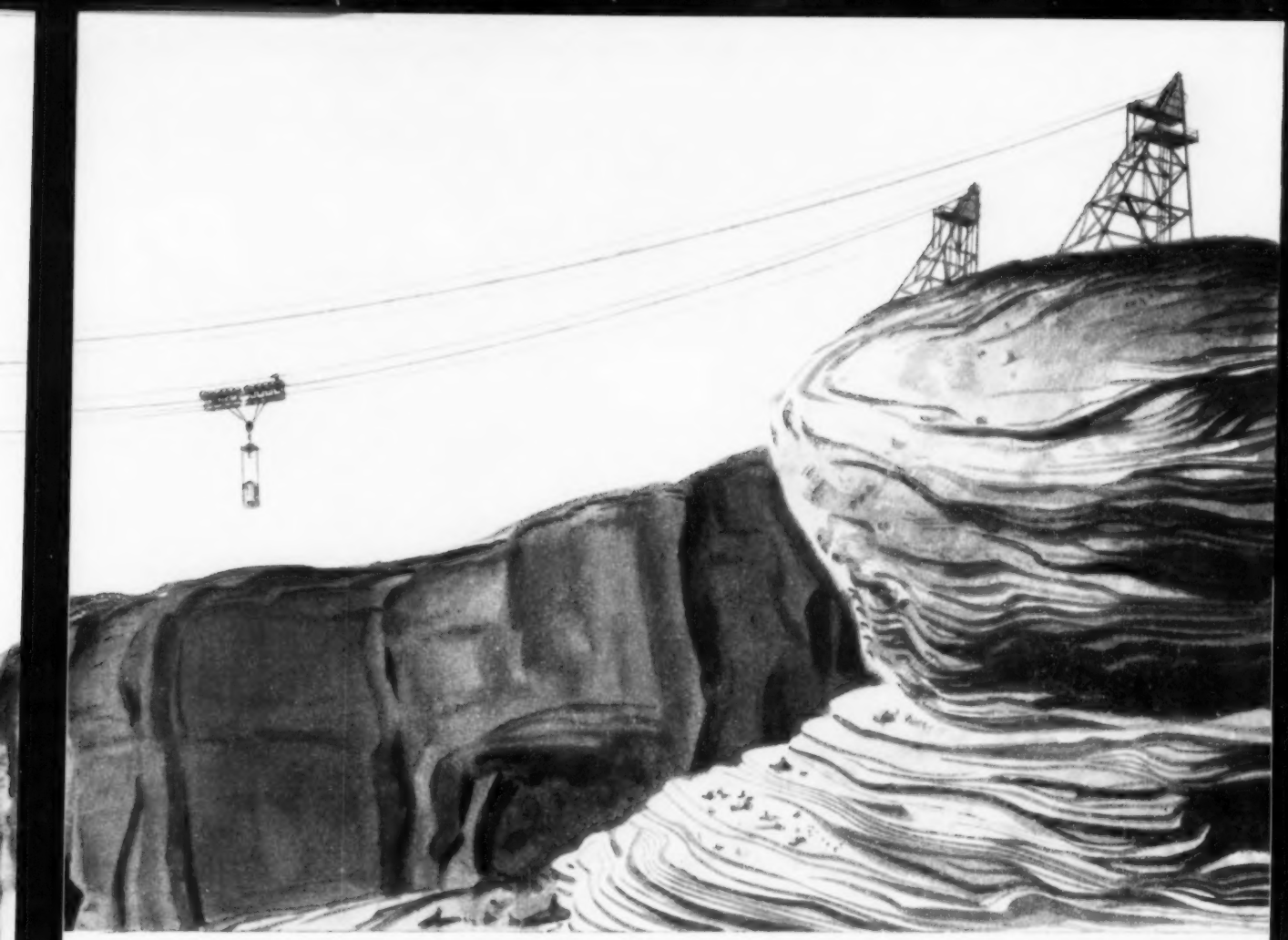
Ranks with the greatest dam projects ever undertaken and is a key feature of the U. S. Bureau of Reclamation's $400-million Colorado River Storage Project.

- Reservoir capacity—28,040,000 acre feet with a lake 186 miles long.
- Power capacity—900,000 kw. in eight generators.
- Volume of concrete in dam proper—4,770,000 cu. yd.
- Contract for dam and power house—$108 million, awarded to Merritt Chapman & Scott Corp.
- Cableway contractor: Kiewit-Judson Pacific Murphy Co.



Four-inch locked coil cable, largest ever made, being finished at American Steel & Wire's Trenton Works. George Trahuba, Operator, inspects the smooth surface of the cable which will support cableway buggies capable of handling 50 tons of construction material.

Perplexed porcupine, "Sticky," inspects short "broomed-out" length of the main cable made up of 312 steel wires. Over 145 tons of the cable have been made for the new dam's cableways.



# Glen Canyon cableways . . . largest ever made!

MEN LOOK like midgets against the backdrop of Glen Canyon—but they are building a giant-size dam on the Colorado that will make a lake 186 miles long.

*Glen Canyon* will be the country's second highest dam. Its 700-foot height is topped only by the 726-foot Hoover Dam. It will require 4,770,000 cu. yds. of concrete which will be poured from two 50-ton-capacity cableways using 12-cu.-yd. buckets. This looks like an endless job, but these cableways really make speed. The contractor is aiming for an unprecedented rate of 9,000 cu. yd. daily—50% more than has previously been possible.

The track cable, or "main gut" as it is called by the dam builders, is the largest ever built. It is a 4-inch-diameter USS Tiger Brand Locked Coil Cable built at the Trenton, N. J., plant of American Steel & Wire. It has a strength of 880 tons, weighs 38 pounds per foot, and operates at a tension of 640,000 pounds. Tiger Brand operating ropes of 1½-inch diameter will also be used on this equipment to safely convey, raise and lower the loads into position.

At the dam, one of the two cableways stretches 2,050 feet between two traveling towers on opposite sides of the Colorado River. The second 1800-foot cableway connects two shorter towers allowing the higher span to pass over the top. Working together, the cableways can place 100-ton loads such as large steel penstock sections. They can handle work in any construction area at the dam.

Another Tiger Brand Cableway using a 3-inch cable 1,490 feet long is helping to build the Colorado River Bridge, the nation's highest and second longest steel arch span.

*Tiger Brand Wire Rope* is engineered to fit the job . . . engineered by one of the finest staffs in the country and backed by the basic research of the United States Steel Corporation. Next time you need wire rope, rig up with Tiger Brand. It will keep your machines on the job. Write American Steel & Wire, 614 Superior Avenue, N. W., Cleveland 13, Ohio.

*USS and Tiger Brand are registered trademarks*

**American Steel & Wire Division of USS United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors — Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors — United States Steel Export Company, Distributors Abroad

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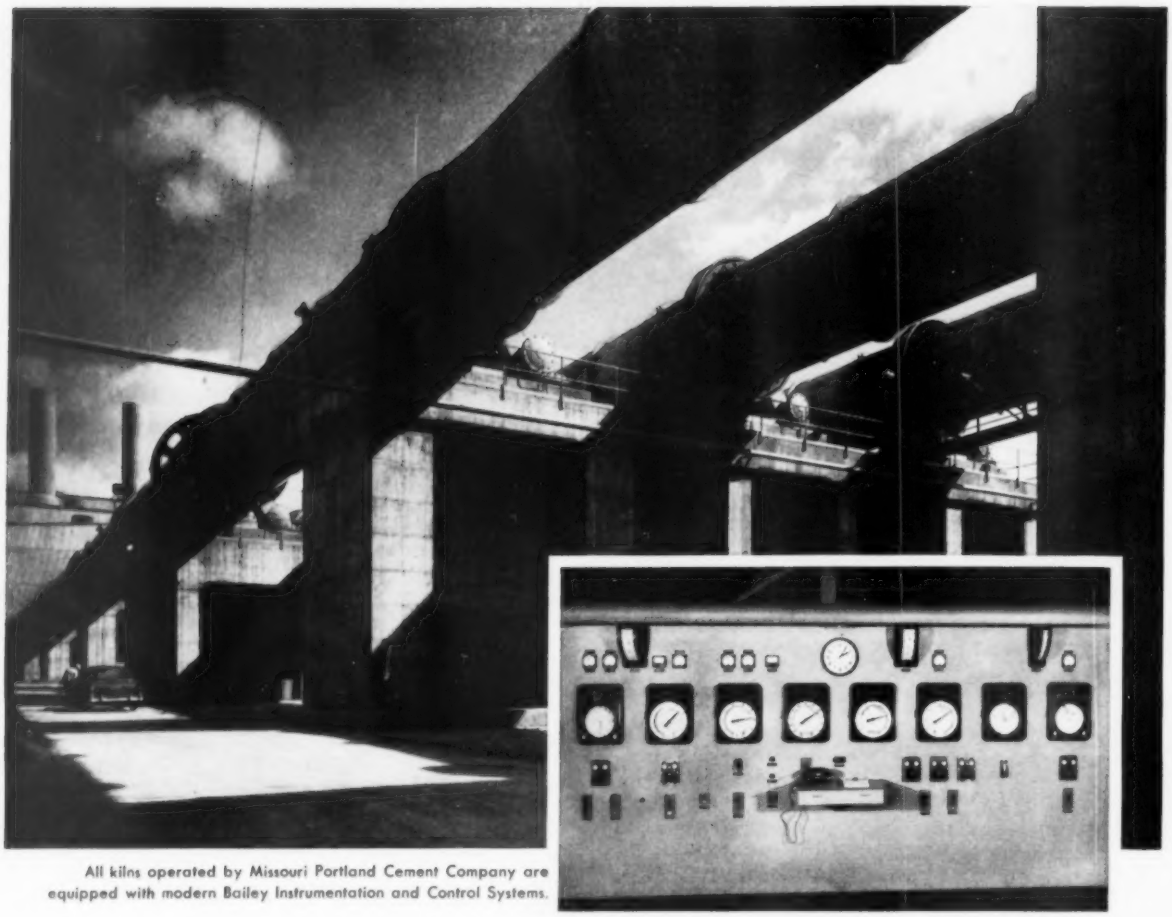


All kilns operated by Missouri Portland Cement Company are equipped with modern Bailey Instrumentation and Control Systems.

# How to control the digestion of giant kilns

These giant kilns have delicate stomachs. But the Missouri Portland Cement Company knows how to coddle them to get maximum capacity, uniform product and low fuel rate.

They do it with a Bailey Control System with a central Control Panel where a single attendant has complete control of the variables of combustion and heating.

Because the system keeps continuous chart records, the Burner can check the reading and trend of Kiln Speed, Exit Gas Temperature, % Oxygen in Exit Gas, % Combustibles in Exit Gas, Kiln Shell Temperature, Hood Draft, Temperature of Secondary Air Leaving Cooler, Temperature of Coal-Air Mixture from Coal Mill, Fuel Gas Flow, Feed End Draft, Kiln Speed, Cooler Speed, Cooler Fan Discharge Pressure, Cooler Undergrate Pressure, Cooler Air Flow, Coal Mill Primary Air Pressure, Coal Mill Exhauster Fan Suction, and Fuel Gas Flow.

The system works so dependably that week-long kiln runs have been made without the operator touching anything.

Let a Bailey Engineer help you plan for peak performance! For additional information write for a Bailey Kiln Control Folder. C-14

**BAILEY METER COMPANY**

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

# SMIDTH

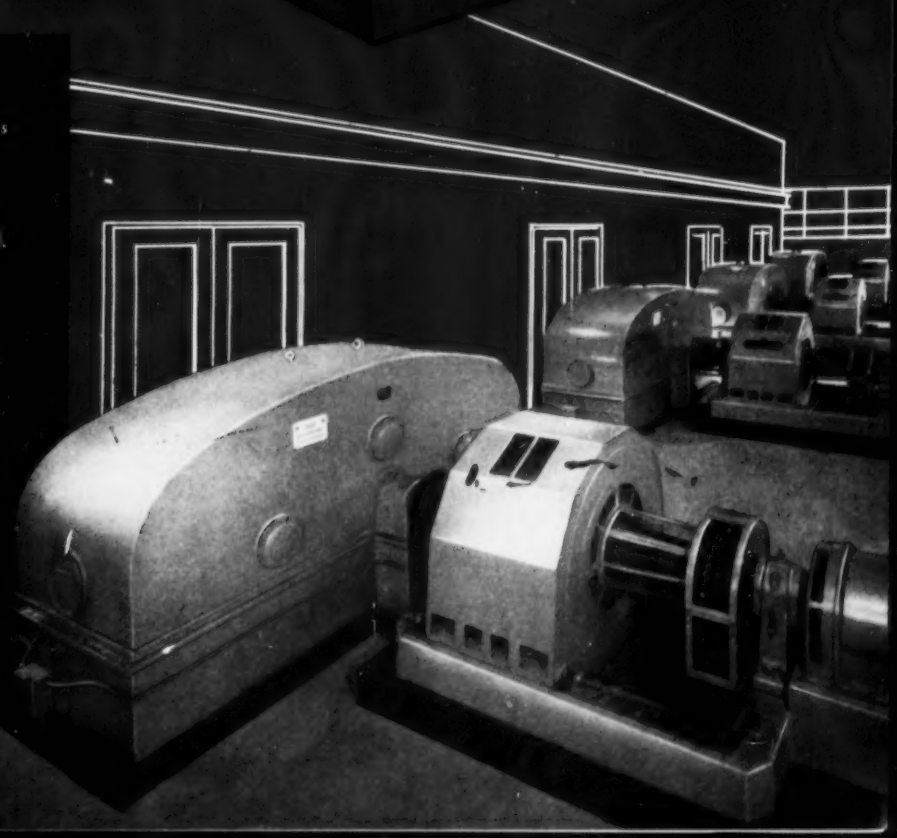
## symetro drive

**Years of continuous, reliable performance at highest efficiency and negligible maintenance.**

**Gears are precision cut, dip lubricated, no oil pumps or coolers required.**

**Symetro Drivés and motors often installed in a separate room eliminating dust and noise.**

For SMIDTH Grinding Mills



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F. L. Smidth & Co.
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42 Queen's Road , Bombay, India

This aerial view of the expanded Union Bridge, Md., plant of the Lehigh Portland Cement Company, shows the three new kilns (right of center). Capacity of each kiln is 1,000,000 bbl. annually. The largest building is the 907-ft. storage for raw materials.

# Lehigh's

ANOTHER ON THE SPOT REPORT

THE record-breaking expansion of cement-producing capacity which is still going on has resulted in a number of completely new plants — some replacing old plants—and the conversion of many older operations into virtually new plants. In both cases increase of capacity was the primary factor; but there was also an important improvement in efficiency and economy of operation and in ability to make better and more uniform cement. A good example of the latter type of development is the plant of the Lehigh Portland Cement Company at Union Bridge, Md.

The original plant at this location was built in 1910 by the Republic Finance Company. On completion, the plant was sold to the Tidewater Portland Cement Company, which put it in operation in August, 1911. Lehigh took it over in 1925, and in 1939 rebuilt and enlarged the operation as a waste-heat plant with a capacity of 1,000,000 bl. annually.[1] The sweeping program completed in August, 1957, resulted in an almost entirely new plant with a 3,000,000-bbl. capacity. Although the old kilns and waste-heat were abandoned, the old raw and finish-grinding departments were retained to supplement the new ones, and the existing storage and packing facilities were also retained.

[1]See PIT AND QUARRY, July, 1941, pp. 35-43, 46. *Efficiency Up, Operating Costs Down as Lehigh Rebuilds Union Bridge Mill*, by Walter E. Trauffer.

Almost any type of cement can now be made at Union Bridge. Types I, II, and III, both regular and air entraining (Types Ia, IIa and IIIa), and mortar cement have been made. Types IV and V can also be made. All of the finer and air-entraining cements and mortar cement are made in the new mills, the old finish mills being used only when more of Type I is needed.

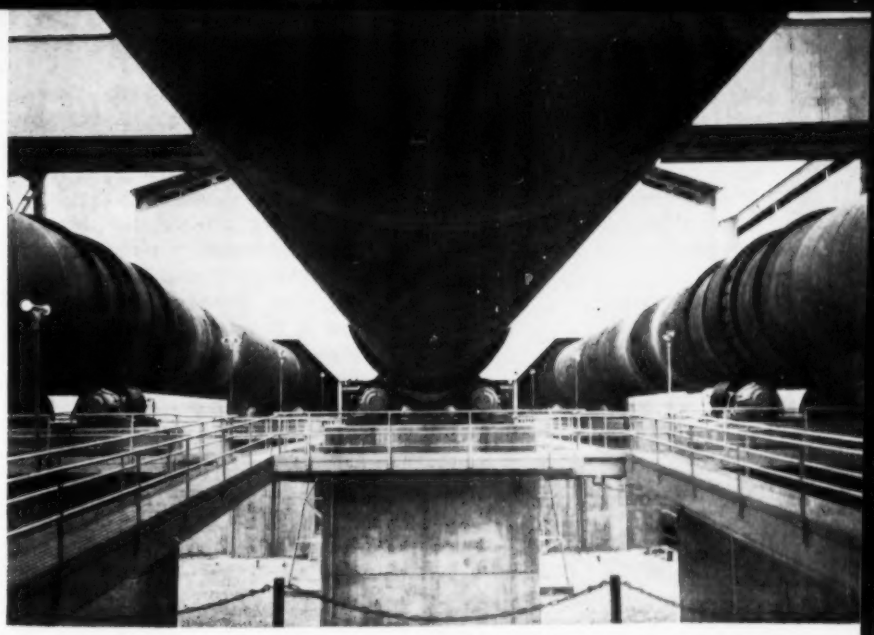
**Features** This plant has many notable features, but outstanding is the attention given to instrumentation, automation, and electrification. In the raw- and finish-grinding departments the rate of flow through the mills is controlled by a wattmeter on the elevator carrying the mill discharge stream. This device ties in with the control

*Capacity tripled with:*

*increased efficiency*
*greater economy*
*more uniform product*
*wider variety*

*Features advanced*

*instrumentation*
*automation*
*electrification*



The three 11-ft. 6-in. by 400-ft. rotary kilns, showing the attractive concrete construction in this area.

By WALTER E. TRAUFFER

# Union Bridge Plant

The 4½-cu. yd. electric shovel loading into 25-ton side-dump trailers in the limestone quarry. In the background are the two 6-in. drills.

of feed; if the circulating load is too low, the feed is speeded up and *vice versa*, cutting off any fluctuations before they become serious. The uniform circulating load thus obtained has resulted in high mill capacity and uniform products.

Power is distributed from the main electrical distribution center in the powerhouse to the various departments—raw mill and storage, primary crusher, finish grinding, kiln, and packhouse and silos. At these points further reduction of the current is done by transformers; and the starting equipment for the department is located in a pressurized room. Each set of equipment has its own control panel, and there is a lockout switch at every motor. All equipment can be started and stopped or locked out either at the panel or at the motor.

The plant is modern and spacious, having ample provision for possible expansion. Safety was given full consideration in the design of the plant and the control system. Attention to detail is noticeable throughout the plant—from the use of television at the crusher house to the unusual cement silo and scale system. In addition to the usual wash and locker rooms, toilets are provided at convenient locations, cranes and hoists are located at every point neeeded, and there are complete shops, warehouses, etc. The plant was designed for a capacity of 3,000 bbl. daily per kiln and it is actually averaging 3,100 bbl. in normal operation. About 580 lb. of raw materials is required per bbl. of cement.

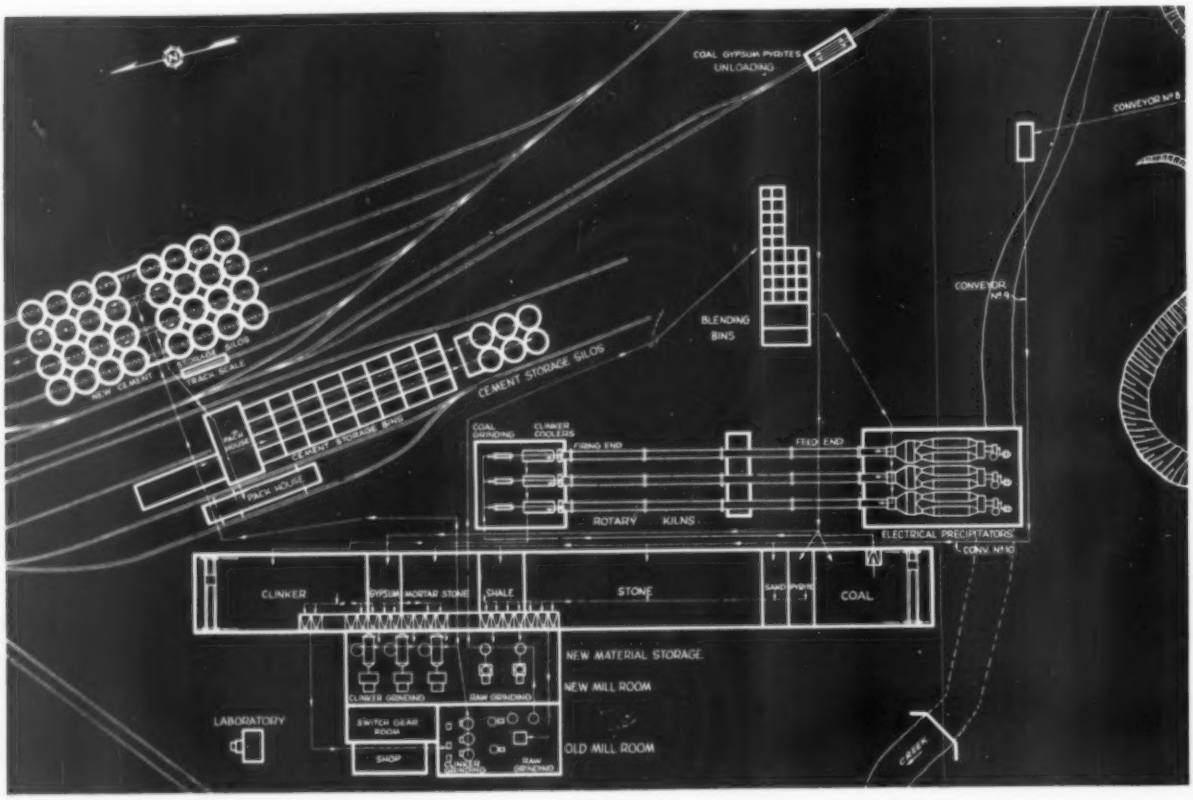
**Quarry** The two major raw materials are in adjacent deposits, one a mile from the plant. The Wakefield formation is a high-purity limestone, which has some pockets and is sharply tilted and highly stratified. The magnesium content is low, but some high-magnesian stone is found in lenses. There is no overburden at present as the lower level of an old quarry is being worked. A third raw material is a sandstone from a quarry 3 miles away. The quarry was opened in 1927, but a new operating level was opened in 1951.

The nature of the limestone presents some drilling and blasting problems. The present face averages 40 ft. in height, and drilling is being done with a Joy No. 58 Heavyweight Champion drill and a No. 56 Middleweight Champion, both using 6-in. bits. The drill holes are spaced an average of 12 ft. for best fragmentation, and shots are made in 2, 3, or 4 rows, depending upon conditions. Du Pont Nitramon is used, and detonation is Primacord and caps. Secondary drilling is being done with jackhammers, but a crane and drop ball have been ordered. Loading in this quarry is done with a Bucyrus-Erie 110B shovel with a 4½-cu. yd. dipper and a Marion 492 shovel with a 3½-cu. yd. dipper, both electric.

Drilling in the shale quarry is done with a Gardner-Denver Air-Trac crawler-mounted air drill. A Bucyrus-Erie 30B diesel shovel loads the shale into dump trucks which haul to a stockpile near the quarry.

In the sandstone quarry wet drilling is done with a Keystone No. 51 churn drill having a 6-in. bit. Secondary breaking is done with a crane and drop ball. A Bucyrus-

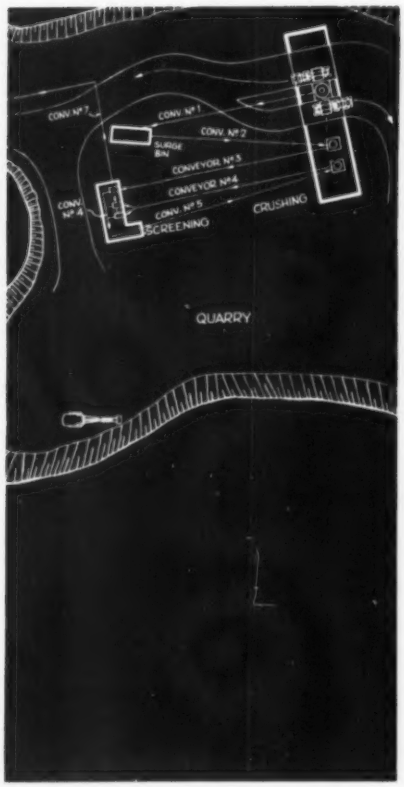
A plan drawing of the quarry and plant.



Erie 30B 1 cu. yd. shovel loads the sandstone to dump trucks which haul 3 miles to a stockpile at the shale quarry. Loading from both the shale and sandstone stockpiles is done with Bucyrus-Erie 75B and 50B shovels.

All hauling of these materials to the cement plant is done by a fleet of four Easton 25T side-dump trailers hauled by Caterpillar DW20 diesel tractors. These have a short turning radius, which is an advantage both in the quarry and at the crushing plant. Limestone, shale, and sandstone, respectively, form 80, 15, and 5 per cent of the cement mix. To achieve this mix, these materials are hauled and crushed separately for a day or more as necessary. As the sandstone is difficult to process separately, however, it is fed with an equal amount of limestone.

**Crushing and Screening** At the plant the 25-ton trailer loads are discharged into the primary crusher from either side by means of Easton Model HE28 elbow-type electric hoists. The 54-in. Traylor Type TC Bulldog gyratory crusher is driven by a 350-hp. motor. It reduces the raw materials to 8-in. minus at the rate of 1,200 t.p.h. A Jeffrey 6- by 10-ft. electric vibrating feeder discharges this material on a 54-in. by 246-ft. belt conveyor (No. 1), which discharges into a 600-ton surge bin. An R.C.A. metal detector stops this belt automatically. A General Electric closed-circuit television installation, makes it possible for the crusher operator to watch the bin material level.




A 5- by 9-ft. Jeffrey electric vibrating feeder discharges from the surge bin onto 42-in. by 238-ft. belt conveyor No. 2. The discharge from this unit is split to a pair of 7-ft. Symons cone secondary crushers—a standard and a short-head. These are set at 3½- and 1½-in. openings, respectively, and each is driven by a 300-hp. motor.

The products of both secondary crushers are carried on 42-in. by 273-ft. belt conveyor No. 3 to a 6- by 10-ft. Symons Type K rod-deck screen with ⅞-in. clear openings. Oversize from this screen is carried by 42-in. by 53-ft. belt conveyor No. 6 to 42-in. by 283-ft. conveyor No. 5. A Magnetic Engineering Co. Type LR, 42-in. magnet removes any metal before it discharges to another 7-ft. Symons short-head cone crusher set at 1½-in. opening.

The product of this crusher is carried on 42-in. belt conveyor No. 4 to a pair of 6- by 10-ft. Symons rod-deck screens with ⅞-in. clear openings. The oversize goes to conveyor No. 6 for return through the crusher.

Minus ⅞-in. material through all of the three screens is discharged on 36-in. by 169-ft. belt conveyor No. 7, which is the first of a series of four conveyors to storage. Conveyor No. 8 (36 in. by 177 ft.) inclines to above ground level and carries the material to the main plant. Conveyor No. 9 (36 in. by 534 ft.) crosses over to the top of the storage building wall. There the material is discharged on 36-in. by 467-ft. distributor belt conveyor No. 10. This conveyor can discharge to any part of the raw end of the storage building by means of a traveling tripper.

These are Chain Belt conveyors with U. S. Rubber Company belting. They have rubber idlers at their loading points to absorb shock, and at their discharge ends several spiral rubber return idlers clean the belts. All are driven by Westinghouse gearmotors ranging from 15 to 125 hp., except conveyor No. 8, which is driven by a 200- hp. motor through a Falk speed reducer.

**Storage** The 907-ft. long storage building is served by two 90-ft. span 17½-ton P&H cranes with 6-cu. yd. Wellman clamshell buckets. There is storage capacity in this building for 9,300 tons of coal, 6,000 tons of pyrite sinter, 4,000 tons of sandstone, 50,000 tons of limestone, 7,800 tons of shale, 9,600 tons of mortar stone (mixed sandstone and limestone) and 128,000 bbl. of clinker. At one end there is outside storage for 10,000 tons of coal and at the other end for 250,000 bbl. of clinker. The cranes rehandle these materials to feed pockets for the new and old raw-mill and finish mill departments and for the coal mill.

Coal, gypsum, and pyrite sinter are received at an unloading station in hopper-bottom cars. There they are discharged into a track hopper under which there is a Chain Belt apron feeder with a dust-reclaiming screw beneath it. A 30-in. by 596-ft. belt conveyor (No. 14) carries the coal and pyrites to a 30-in. by 143-ft. distributing conveyor (No. 11) on the same side of the storage as the main raw material distributing conveyor. Gypsum goes *via* 24-in. by 104-ft. belt conveyor No. 13 to an elevator to storage.

**Raw Grinding** One of the overhead cranes rehandles raw materials from storage to raw mill feed pockets lined up along the wall between the storage and the new mill room. The pockets for limestone, sandstone, and shale for each of the two mills have capacities, respectively, of 150, 190, and 146 tons. Schaffer Poidometers driven by d.c. motors feed the three materials for each mill on 37-ft. Carrier vibrating conveyors, followed by continuous bucket elevators which in turn feed to the two No. 366 Babcock & Wilcox 3-

Two of the three 7-ft. cone secondary crushers with the 54-in. primary gyratory crusher in the background.

stage ball-bearing type raw mills. The latter are driven by 500-hp., 900-r.p.m., 4160-v. induction motors. The product of each mill is fed by another elevator to a 16-ft. Sturtevant air separator equipped for drying. Separator rejects are returned by gravity to the mill feed elevator, forming a 700 to 800 percent circulating load.

Each of the two raw-mill systems has a B&W furnace which supplies the heat for drying the raw material. No. 2 fuel oil is used instead of the usual heavier oil. This oil costs more and contains less B.t.u.'s, but it is easier to handle, does not require preheating, and involves no insurance problems. Raw material is heated in the separators to about 160 deg. F. The 170-deg. exhaust gases from the separator are drawn through cyclones and a Norblo 25,000-c.f.m. cloth-bag-type dust collector and exhausted to atmosphere. Everything in this circuit is insulated. Dust from both collectors is discharged *via* Fuller-Huron Airslides to the screw conveyor, which takes away the finished raw material from both separators. This screw can feed to either of two 10-in. Fuller-Kinyon pumps, one being kept in reserve.

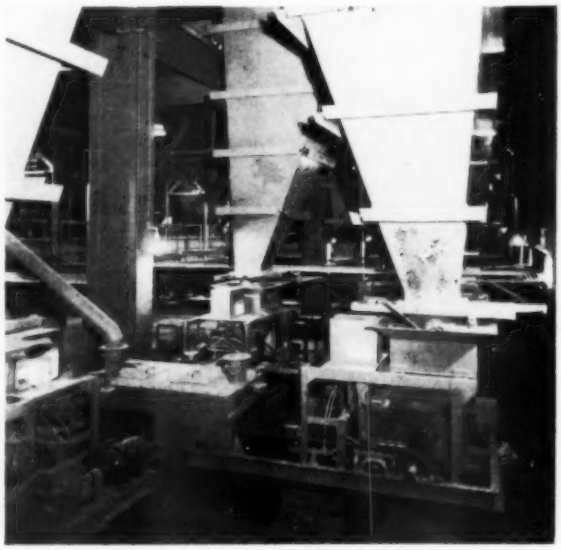
It is believed that fine grinding of the raw material results in better kiln operation. Each of the two raw-grinding systems has a capacity of 45 t.p.h. grinding to 92 percent through 200-mesh.

Each of the two raw-grinding circuits has its own control board, with all the necesary instruments and a diagram of the circuit with indicator lights. The automatic starting sequence system can be operated either on an interlock sequence or on a test sequence. This first starts the separator, then it lights the gas pilot flame—which ignites the furnace oil burner — and then the equipment is started in order. Safeguards are provided for such possibilities as the failure of the oil to ignite. The Poidometer settings regulate the feed rate to the mill, and these can be set by hand to get the desired composition. Once the Poidometer is set, the rate of total feed can be changed either automatically or by hand. The Leeds & Northrup Speedomax H automatic control responds to the power load on the mill discharge elevator through the variable-speed Poidometer motor.

The control panel for each circuit has a dust collector draft indicator, a recorder for the power load on the elevator and mill, ammeters, and related controls.

The old raw-grinding department has 97-, 94- and 77-ton pockets for sand, shale, and stone, respectively. A No. 366 Babcock & Wilcox mill is fed by Jeffrey Waytrol feeders. Drying heat is furnished by a B&W oil furnace, and the circuit is connected to a 16-ft. Sturtevant separator and a 25,000-c.f.m. Norblo dust collector. Finished raw material is carried by a screw conveyor to the same fines conveyor serving the new grinding department.

**Raw Material Blending** The pump feeds the pulverized raw mix to a blending system of the company's own design. This consists of 18 square blending bins, each with a capacity of 400



Some of the six feeders which proportion limestone, sandstone, and shale for the raw-grinding mills.

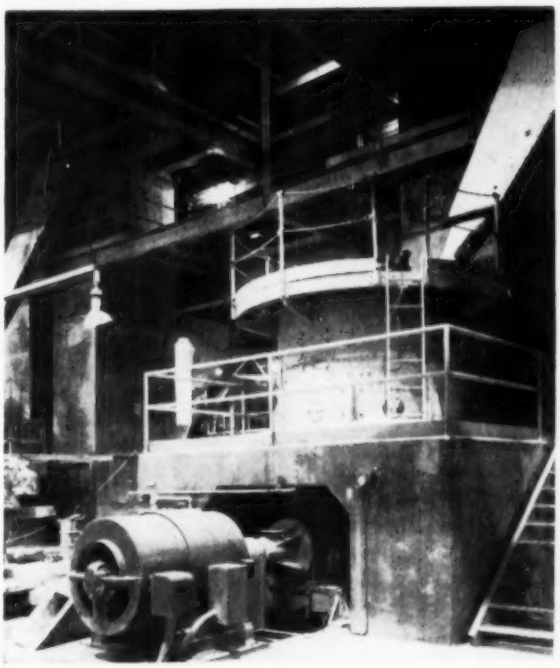
tons. Ten of these bins receive raw material one at a time, and after a bin is filled it is analyzed. The contents from four or more of these bins are then fed to one of the eight reblending bins and again, after analyzing, from four or more of them to the two kiln feed bins. In an emergency, or if a blending bin happens to have a perfect mix, its contents can be pumped direct to the two 500-ton kiln feed bins without reblending.

Each of the 18 bins has a Fuller rotary feeder, and the material from four or more goes *via* a screw conveyor, a mixing conveyor, a Fuller-Huron diffusing feeder, and a 10-in. Fuller-Kinyon pump to the reblending bins. From four or more of these a similar series of screw conveyor, mixing conveyor, distributing feeder, and 10-in. pump supply the kiln feed bins. Each of the pumps has a spare, and air for all four is supplied by four Fuller rotary compressors.

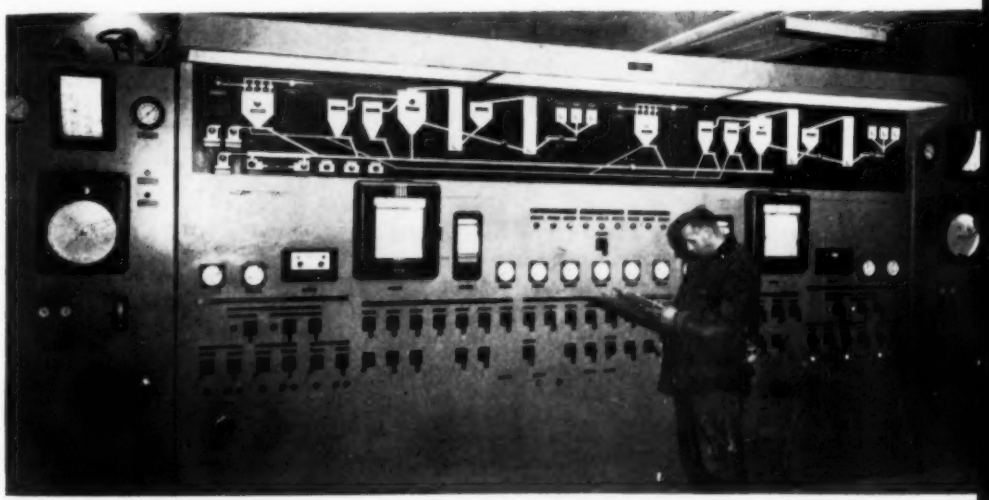
**Kiln Feed** Under each of the two kiln feed bins are two 12-in. screws with variable-speed d.c. drives. Each pair of screws feeds to a bucket elevator, which in turn feeds to an 18-in. cross screw conveyor; the latter discharges to the opposite bin. Across and under each pair are three sets of two 14-in. screw conveyors, one set for each kiln. These are normally filled by the first main screw, and in any event by the second, so that they are sure to be full and provide a constant feed to the kiln at all times. Both feed bins have high bin level indicators to warn the operator when they are full.

**Kilns** The three 11-ft. 6-in. by 400-ft. F. L. Smidth rotary kilns are of all-welded construction with shell thickness varying from 1 in. up to 2½ in. at the tires. They are mounted on five rollers and floating tires and have a slope of 7/10 in. per foot. They are driven by 150-hp. Westinghouse d.c. motors through Foote gear reducers and have a synchronous tie-in with the feeder motors. Speeds up to 80 r.p.h. are possible, but 60 r.p.h. has been found most satisfactory. Current for each kiln and feeder motor is provided by a 250-hp., 150-kw. motor-generator set. Each kiln has a manhole at about midpoint for brick removal.

The only difference among these kilns is in the linings. The No. 1 kiln has, from the discharge end, 10 ft. of 70 percent alumina brick, 40 ft. of Magnecon, 30 ft. of 70 percent alumina, 40 ft. of 50 percent alumina, 260 ft. of insulating brick,



One of the two ball-bearing type raw-grinding mills operating in circuit with the 16 ft. drying separators.



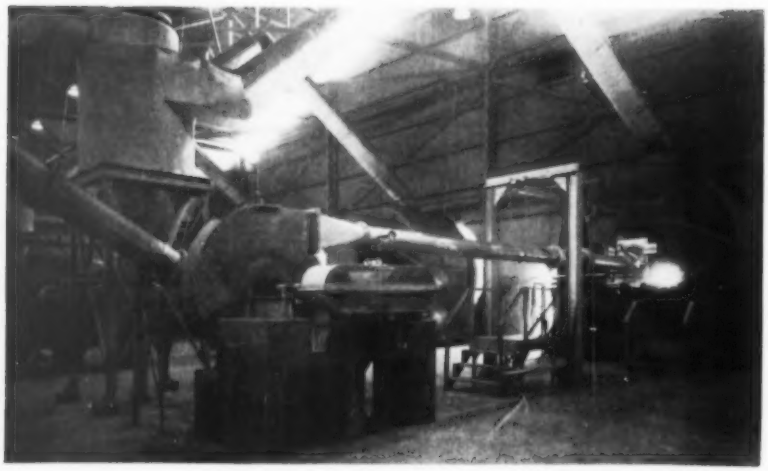
The graphic control board for the two raw-grinding circuits. The diagram of each circuit has indicator lights which show operations at a glance.

and 10 ft. of wear-resisting brick at the feed end. Kilns No. 2 and 3 have 10 ft. of 70 percent alumina, 50 ft. of Magnecon, 30 ft. of 70 percent, 300 ft. of 50 percent, and 10 ft. of wear-resisting brick. Except for the Armstrong insulating brick, all refractory material is Harbison-Walker. A detailed record sheet is kept on each kiln for purposes of comparison.

**Draft** The gases from each kiln are drawn through individual dust chambers to the first stage of dust collection. This consists of 24-in. dia. cyclones in groups of 48 for each kiln. Ducts from each group feed to 160,000 c.f.m., 2-section, 3-compartment Koppers electrical precipitators. These collectors have a guaranteed efficiency of 96.1 percent in weight of material recovered and they have collected up to 25 tons of dust per kiln per day.

The draft fans are F. L. Smidth units rated at 165,000 c.f.m. at 650 deg. F. and driven by 300-hp. motors. Louvre dampers ahead of the collectors reduce the temperature at the fans to 600 deg. F. Gases are exhausted through 11-ft. 6-in. I. D. by 80-ft. steel stacks.

One of the three 7- by 44-ft. inclined-grate clinker coolers with the hammermill for reducing oversize.



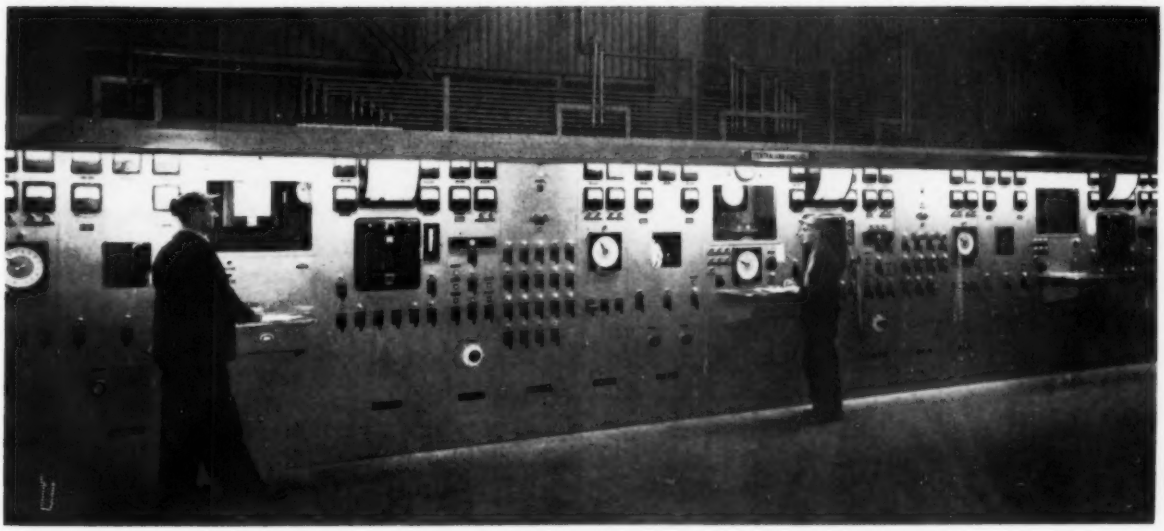
This firing floor view shows two kiln hoods, the cyclone clinker trap for primary air from the kiln hood, and the fan and burner pipe.

**Coal** Coal is withdrawn from its storage pocket by a 3- by 6-ft. Jeffrey vibrating feeder and is passed over a grizzly to a 24-in. by 24-in. Jeffrey single toothed-roll crusher. A belt conveyor with a Merrick Weightometer carries the crushed coal to the three coal mill feed hoppers. Enclosed table feeders discharge to the three 6-ft. 6-in. by 23-ft. F. L. Smidth Tirax air-swept 3-compartment ball mills. The first compartment of each mill has only lifters to facilitate drying. The second compartment is loaded with 3,500 lb. of 2-in., 3,500 lb. of 1½-in., and 1,600 lb. of 1¼-in. grinding balls. The third compartment has 4,200 lb. of 1-in., and 13,000 lb. of ¾-in. balls. The mills have slide shoe bearings and are driven at 20.9 r.p.m. by 150-hp. induction motors. Draft is provided by a 1250B Smidth fan. These mills are each grinding 5 t.p.h. to a fineness of 80 percent through 200-mesh.

The coal is a West Virginia high-ash, low-sulphur bituminous of 11,000 to 12,000 B.t.u.'s and is of 1½-in. size and under. The usual consumption is about 80 lb. per bbl. (900,000 to 950,000 B.t.u.'s per bbl.) but it has gone as low as 72 lb. when the coal is dry.

The primary air is drawn from the top of each kiln hood through a cyclone clinker trap, an enclosure around the table feeder, through the mill, and up to the classifying tower, which returns the coarse coal to the mill. The primary air and pulverized coal are carried through the fan to the 12-in. burner pipe, which has a water-cooled tip. Tempering dampers admit cold air ahead of the mill or bypass air around it, controlling the temperature of the air to and from the mill.

**Clinker Cooling** Clinker is discharged from the kilns into three 7- by 44-ft. Fuller inclined-grate coolers of standard design. Grates scalp the oversize clinker to hammermills before discharge to separate Carrier vibrating conveyors. These feed a bucket elevator, which can either discharge through a spout



Main control board for the three rotary kilns and their related equipment, including coolers, coal mills, fans, etc. Between the segments for kilns No. 1 and 2 is a panel for the clinker conveyor system from the coolers to storage.

direct to the storage building or to a dragchain conveyor for distribution in the storage. At the coolers an emergency by-pass dragchain conveyor can take hot clinker from the kilns direct to an outside pile.

The cooling air for the cooler is supplied by a 35,000-c.f.m. fan. The excess hot air over the secondary air requirements of the kiln is drawn by a 15,000-c.f.m. fan through a Multiclone dust collector.

**Kiln Control** The long main kiln control panel has one segment for each of the three kilns. On each segment the following are installed: ammeters; voltmeters for the induced draft fans, kiln, cooler, coal mill, etc.; temperature recorders; automatic shutoff of coal supply to the kiln in the event of high temperature; recorder of internal water spray system g.p.m.; and master temperature recorder for 16 points in kilns, Multiclone, duct work, and the coal mills for all three kilns.

Inside each kiln panel segment are the recorders for the following: the Beckman oxygen analyzer; the hood draft and dust chamber draft; 4-point coal mill temperature; kiln dust chamber and Multiclone temperature; kiln speed; primary air and coal mill draft; and cooler temperature.

The No. 1 and 2 kiln panel segments are divided by a feed loop and dust recovery indicating panel. The No. 2 and 3 segments are divided by a panel for the clinker conveyor system from the coolers into storage. Most of the control instruments are Leeds-Northrup.

In controlling the kiln operation, the draft in the dust chamber is held at about minus ½ in.; this is done manually through a motor-driven louvre damper. The automatic hood draft control allows selection of varying negative pressure and maintains it through the exhaust fan in the cooler—a minus 1/10-in. pressure is held at the kiln hood. Primary air is held at 25 percent and 180 deg. at the burner, by means of a butterfly damper in the coal grinding and drying closed circuit operation. The positions of the tempering damper and main louvre control damper for the I.D. fan are registered on the main control board and can be positioned from it. I.D. fan speed can be controlled only at the fans. Coal feed rate is controlled by a d.c.-motor-driven table feeder. Kiln speed is regulated by a d.c. rheostat in the d.c. generator field. A speed of 60 r.p.h. is being held.

A kiln exit gas temperature of 1,200 deg. F. must be maintained to get the desired output. The secondary air to the kiln is held at 1,500 deg., and the burning zone temperature at 2,700 deg. by means of an optical pyrometer. All of these are adjusted manually. A temperature of 800 deg. is held at the Multiclone; it is controlled by a water spray system at the rear end of the kiln and a cold-air bleeding damper. The temperature of the gas leaving the electrical precipitator is about 600 deg. F.

**Dust Return** Dust taken out of the kiln gases by the Multiclones and electrical precipitators is carried by screw conveyors to one of the two kiln feed bucket elevators. Dust and raw material are discharged to the feed screws and bins described above. This handling and the return and reblending of overflow from the bins ensures intimate mixing.

**Finish Grinding** One of the two overhead cranes rehandles materials for the cement mix from the storage building to the finish mill feed pockets lined up along the wall between the storage and the new mill room. There are three pockets for each of the three mills—for clinker, gypsum, and limestone (when mortar cement is being made). These pockets have capacities of 422 bbl., 97 tons, and 100 tons, respectively. Schaffer Poidometers under these bins blend these materials in the desired proportions direct through chutes to the three new 9-ft. 6-in. by 26-ft. 3-in. F. L. Smidth No. 2980 two-compartment Unidan finish mills. These carry a grinding ball load in the first compartment of 20,000 lb. of 3-in., 24,000 lb. of 2½-in., 12,000 lb. of 2 in., and 8,000 lb. of

The 907-ft. long storage building, which is served by two 6-cu. yd. overhead traveling cranes. In addition to inside storage for raw materials, clinker, gypsum, coal, etc., the storage setup is arranged for outside storage of coal at one end and clinker at the other.

1½-in. balls. In the second compartment there are 36,000 lb. of 1-in. and 60,000 lb. of ¾-in. balls. Each mill is driven at the rate of 19.3 r.p.m. by a 1,250-hp. Westinghouse synchronous motor through a Smidth No. TS 1250 Symetro reduction gear.

In each of the three finish-grinding circuits a short Fuller-Huron Airslide conveyor feeds *via* a bucket elevator and another Airslide to a 16-ft. Sturtevant separator. Tailings are returned *via* another Airslide to the mill feed chute. Each separator exhausts to a 30,000-c.f.m. Norblo bag-type collector, which helps to cool the tailings.

Fine material from each separator is finished cement, and Airslides feed all of this and the collector dust to a 10-in. Fuller-Kinyon pump, which discharges to the storage silos. There is also an 8-in. pump for mortar or high-early strength cements. Each mill grinds Type I cement to 1,750 sq. cm. per gm. Wagner and 2,900 sq. cm. per gm. Blaine.

Each mill is equipped for internal spray cooling at the discharge end, but this is not being done at present. Under each of these mills there is a shallow water-filled settling basin with a porous ceramic drain tile bottom. This catches any cement leakage from the mills and keeps it from getting into and clogging the drains.

The automatic feed control system for each of the finish mills is similar to those used for the raw mills. The control is actuated by the load on the mill discharge elevator, ensuring a uniform circulating load in the mill.

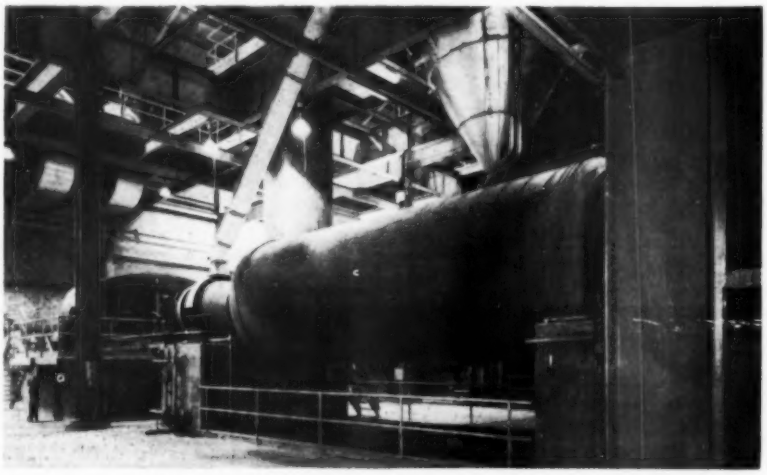
A separate room is provided for the various admixtures used, including fatty acids, Vinsol resin, T. D. A., etc. These are mixed in the room and distributed from there.

The old finish grinding department has clinker, gypsum, and mortar stone feed pockets, with capacities of 370 bbl., 92 tons, and 100 tons, respectively. Grinding is done in two Bradley Hercules preliminary mills and three 6-ft. 6-in. by 20-ft. tube mills. The latter are in closed circuit with 16-ft. Sturtevant separators and each produces 50 bbl. per hr. A 7-in. Fuller-Kinyon pump feeds the cement to an old 80,000-bbl. stockhouse or to one bank of the new silos.

**Cement Storage** Cement pump lines are so arranged that mortar cement can go to any of the six old silos, which have a total capacity of 54,000 bbl. Other types of cement go to the 32 new 15,000-bbl. silos, which are arranged in four rows. These silos are on 33-ft. centers and are 77 ft. high above their support slab, which has a clearance of 37 ft. above the 8-ft. thick supporting slab. Under the roof at the top of each silo there is an opening to each adjoining silo; there is also an opening through the roof at each end silo. When a silo is being filled, the openings on the near side are closed. This lets the pressure exhaust through the other silos to the far side, giving maximum settling.

The silos have conical, self-cleaning bottoms. At the bottom of each cone is a pants-leg hopper, one side feeding to a rotary valve and thence to a hose for bulk-car loading. The other side has a motor-operated valve to a Fuller-Huron Airslide feeding Fuller-Kinyon pumps in the basement for transfer to any of the other silos or for feed to the packhouse. The valves under the silos are controlled from a board.

Cars are weighed on a Streeter-



One of the three 9-ft. 6-in. by 26-ft. 3-in., 2-compartment finish mills, with the reduction gear drive at the left and the 16-ft. separator above.

Amet electronic strain gauge scale, and can be loaded in less than 10 minutes. The scale has a small zeroing dial, and the weight is printed on a ticket. All switching is done by a 70-ton General Electric diesel-electric locomotive with a 150-hp. Cummins diesel engine.

The packhouse is 10 years old and is adequate for present needs. There are three St. Regis 4-tube packers, one for mason cement and two for the other types.

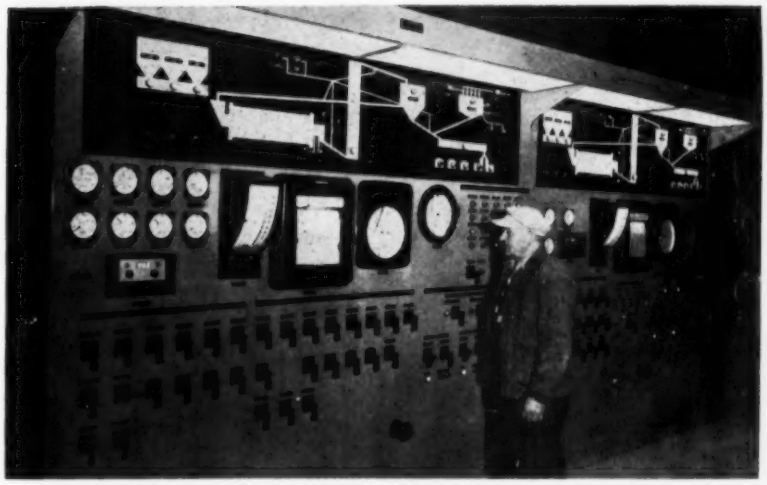
**Miscellaneous** Ground water is a problem, both in the quarry and the plant. The quarry drains to one side, and this water is removed from two deep wells by 3,000-g.p.m. Fairbanks-Morse (Pomona) pumps. These discharge through 12-in. lines into a creek above the quarry floor level. This creeks runs through a concrete channel and under the precipitator building through a closed culvert.

Compressed air for the various Fuller-Kinyon pumps is provided by Fuller low-pressure rotary compressors located near them. The compressed air for other plant use is provided by three 2-stage Fuller rotary compressors rated at 106 p.s.i. and 1,200 c.f.m. of free air each.

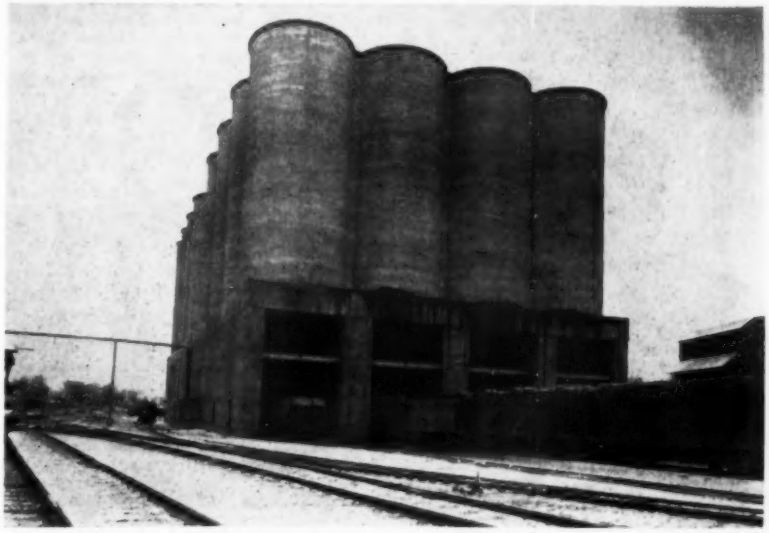
Dust collectors are provided throughout the plant; Norblo bag-type units are used in the grinding departments. Western Multiclones are used in series with Koppers electrostatic precipitators to collect the dust from the kiln exit gases.

The plant was designed by the company's engineering department, and the Consolidated Engineering Company, of Baltimore, Md., was the general contractor. The design of the cement storage silos was a co-operative effort between the engineering department of the Lehigh Portland Cement Company and that of the Consolidated Engineering Company. Most of the building and machinery foundations are on solid rock. A total of 130,000 cu. yd. of concrete was provided by a subcontractor who erected a batching plant and used transit mixers to deliver the concrete.

W. A. Viebrock is plant manager; C. E. Peterson, plant engineer; and H. White, chemist.



This is the graphic control board for two of the three finish-grinding mills. As in the case of the raw mill board, the diagram of each circuit has indicator lights which show operations at a glance.



The new installation of 32 storage silos, each of which has a capacity of 15,000-bbl. Cars below are loaded on an electronic strain gauge scale.

## Russia Challenges Canada In World Asbestos Market

According to Canadian sources, free world currency restrictions and the Russian trade offensive are eroding the Dominion's position as the world's major supplier of asbestos fiber. The outlook for Canadian mines and mills is also affected by the sizable increase in productive capacity.

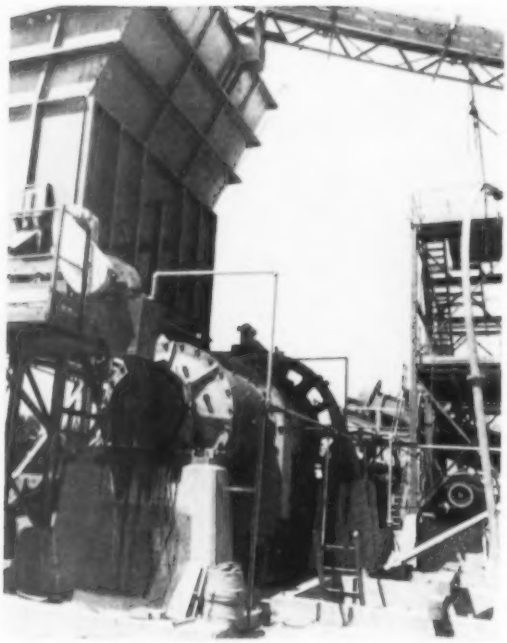
However, heads of mining companies are hopeful that the demand will increase sufficiently to permit Canada to retain its traditional 60 percent of the world asbestos market.

"There has been a lower demand for fiber because of the recession in the United States," said A. R. Fisher, president of the Johns-Manville Corporation, "but the biggest falling off has been in export.

"We are experiencing stiff competition from the Russians in certain grades of fiber."

Asbestos marketing experts say that Soviet sales so far have been at prices not much below those of Canadian fibers. They view Russia's sales offensive as a move to obtain foreign exchange needed to buy strategic materials not available in the Communist bloc.

# Gravel, Cement Plants In Far West register important in processing



Left: Installation of the rod mill for manufacturing sand from surplus small gravels in the new Rhodes-Jamieson aggregates plant near Pleasanton, Calif.

Below: The level-mounted screen in Terminal's new semi-portable plant has 100 sq. ft. of screening surface on each of its two decks. All conveyors — four of which are seen in this picture — are powered by motorized head-pulleys.

ANOTHER ON THE SPOT REPORT

TRAVELING the Pacific Coast and western states in search of editorial material of interest to PIT AND QUARRY readers, the writer was deeply impressed during the year just ended by the large number of technical and operational advances observed in many of the industrial-minerals plants visited. Some of these developments have already been detailed in articles published in PIT AND QUARRY in 1958. These, and still others initially revealed in this article, point up the fact that the Far West certainly keeps in step with . . . and is often a step ahead of . . . the rest of the country in adopting or pioneering new production methods and means.

Southern Pacific Milling Company, for example, erected a new sand-and-gravel plant at El Rio, Calif., to turn out specification material from a notoriously poor river deposit. Soft, unstable, and highly reactive particles are being eliminated by combining (1) elastic fractionation, and (2) heavy-media separation for the first time in a single plant. The former is to be employed in the primary stage of processing for rough removal of much of the offending unsound particles, clay balls, etc., and involves dropping the pit run over a series of tilted steel plates. The hard sound pebbles

# advances techniques

A view across the 576 glass-cloth bags at the Victorville plant of the Southwestern Portland Cement Company. Note the drawcord and clamp attachment over the aluminum caps. The picture was taken during operation.

bounce a relatively greater distance than the soft, thus effecting a primary separation.

Final upgrading is accomplished by sink-and-float in a Wemco HMS Mobilmill, the heavy media consisting of magnetite and ferro-silicon suspended in water to create a solution of the proper specific gravity whereby the sound heavier particles will sink while the lighter unsound gravel floats away to waste.

About two years ago the same concern utilized HMS in its Sisquoc, Calif., plant, where a similar marginal deposit is processed.[1] This year the sand, normally not amenable to heavy-media separation because of its fineness, is being upgraded at the Sisquoc plant by jigging. A 7- by 16- ft. Wemco-Remer jig is used, and up to 60 t.p.h. of specification sand can be turned out, containing less than 10 lb. of objectionable lightweight fines present per ton of finished product!

Terminal Rock & Sand Company of Littlerock, Calif., seized upon the opportunity to produce concrete and bituminous aggregates, as well as road base materials for the accelerating highway-building program. Motivated by the premise that aggregates should logically be produced by an experienced aggregate-plant operator, rather than by the contracting road-builder, Terminal management built a 300 t.p.h. semi-portable plant for on-the-job production.[2] This plant is readily portable since it requires only bolting the various units together; these were designed in 8-ft. sections.

To keep the dozen or so conveyor sections as light and self-contained as possible, all are powered with Shrock motorized head-pulleys; motors and reduction gearing are contained within the pulley shells themselves.

This firm's first job involves a 700,000-ton subcontract near Grapevine, Calif. Another innovation on the Terminal plant is the use of a high-capacity 5- by 20-ft. Hewitt-Robins Hi-G screen. This newer type of screen utilizes principles of harmonics, with reaction springs storing potential energy to impart vibration. Only a very small vibrator (exciter) is needed to power the unit.

At least two other western aggregate producers, Consolidated Rock Products Company of Los Angeles, and Fountain Sand & Gravel Company of Pueblo, Colo., have also installed one or more of these screens in the last year or so.

A trend toward the use of rod mills or other grinding devices to manufacture sand from surplus pea gravel continues in the West. Large plants like the new 600-t.p.h. Rhodes-Jamieson operation near Pleasanton, Calif., as well as small operations like Carlsbad Transit Mix Company's 50-t.p.h. plant at Carlsbad, N. M.,[3] were observed to have rod mills in the circuit for sand production.

A rather novel idea for marketing aggregates was adopted by Fair Oaks Gravel Company of Fair Oaks, Calif. Rather than to acquire a fleet of truck-mixers and enter the ready-mix business itself in competition with its existing and potential customers, Fair Oaks erected a Noble semi-automatic batch plant on its property to supply the needs of purveyors of concrete and contractors. This service is reportedly paying off in accelerated sales of sand, gravel, and cement.

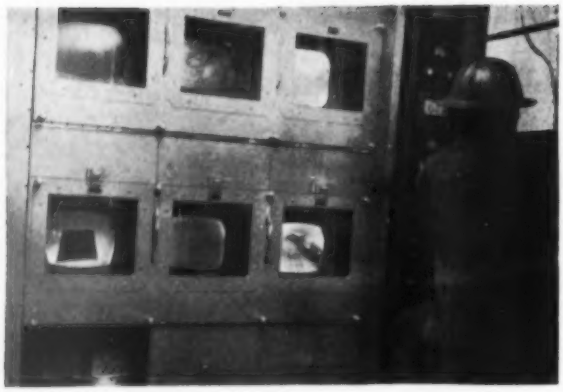
The practice of supplying slurried base-rock for delivery direct to road projects seems to be growing, particularly in the San Francisco Bay area. By adding water at the plant, the highway contractor is not required to wet, blade, windrow, and spread the base course on the road bed. The slurried material, of course, commands a premium price and has won the approval of the California Highway Department. Pugmills and other devices wet and mix the product at the plant just prior to delivery.

A number of particularly intriguing new developments were noted in the cement industry in California.

[1]See PIT AND QUARRY, September, 1956, pp. 88-91.

[2]See PIT AND QUARRY, December, 1958, pp. 124-126.

[3]See PIT AND QUARRY, October, 1958, pp. 88-91.



A view in the primary crusher building at the Creal plant of the California Portland Cement Company, showing the six monitors housed in a dust-tight refrigerated cabinet alongside the operator's control panel. From this point all operations in the crushing circuit are controlled.

Southwestern Portland Cement Company, after obtaining excellent results at its El Paso plant and in pilot-plant tests, erected a large-scale baghouse at its Victorville, Calif., plant[4] to extract dust from the exit gases of one of its rotary kilns. The heart of the process is the use of siliconized, heat-resistant woven-glass bags. The latter have a low installation and maintenance cost, and collection efficiency is close to 100 percent. The filtered gases escape into the atmosphere beneath the baghouse roof eaves. No stack is needed. Similar baghouses are planned for other kilns at Victorville, and several new cement plants to be completed in the country in 1959 are also adopting this method of dust collection.

After years of experimentation a practicable method of automatic kiln control[5] was evolved at the San Andreas, Calif., plant of the Calaveras Cement Company. Basis for this control is dependent upon ascertaining accurate mix temperatures, continuously, in the burning zone. This problem was ultimately solved by building wells into the kiln near this point (170 ft. from the firing end of a 360-ft. kiln) to house and protect the thermocouples. Instrumentation involving a temperature recorder-controller and a fuel-and-primary-air-ratio recorder and controller has accomplished automatic regulation of burning which is much more efficient than was possible by human-manual control.

Visual remote control of the crushing, handling, and stone storage circuit of the California Portland Cement Company plant near Mojave, Calif., became a reality in the summer of 1958 through the medium of closed-circuit television.[6] In an installation which undoubtedly makes the most extensive use of industrial TV in the industrial minerals field, the Mojave setup includes eight television cameras placed at strategic points from the primary crusher to the storage hall. From his station in the control house at the primary crusher the operator has before his eyes a cluster of monitors (TV screens). Should pile-ups, jams, or other trouble occur along the way, regulation can usually be effected from the operator's panel board, which is alongside the monitors.

Graham Bros. placed a small one-camera TV installation in service at its sand-and-gravel plant near El Monte, Calif. This was done primarily as a safety measure to enable the operator in the plant control cubicle to start a "blind" conveyor located in one of the distant pits.

Permanente Cement Company, Oakland, Calif., was perhaps the first to acquire a Bendix nuclear device for slurry density control. Mounted on the outside of the pipeline carrying raw-mix slurry, the device is able to "see" through the pipe and determine the pulp density. Water content can be increased or decreased in the mill automatically by controls actuated by the device.

An interesting use for slag in the dump at the Fontana, Calif., steel mill of Kaiser Steel Corporation was developed by Mineral Wool Insulations Company. The latter concern has been blowing slag wool in a plant at the dump, also crushing the material for railway ballast. Now it is also screening the slag in about ¼- to ½-in. size, permanently dyeing it in a wide range of colors, and sacking the product for market as roofing and decorative granules. Nurseries and garden-supply houses in Southern California are important outlets to do-it-yourself home-owners who utilize the product in colorful applications on outdoor patio projects.

[4]See PIT AND QUARRY, October, 1958, pp. 80-88.

[5]See PIT AND QUARRY, May, 1958, pp. 80-83.

[6]See PIT AND QUARRY, October, 1958, pp. 92-95.

### Turkish Cement Output Up As New Facilities Are Built

A cement plant at Corum, Turkey, inaugurated in October, 1957, began production early in 1958. At present, the facility has an annual capacity of 85,000 tons and will use 140,000 tons of raw material. Another plant at Balikesir, with an annual capacity of 85,000 tons, began producing in July, 1958.

Plants at Elazig, Gaziantep, Konya, and Pinarhisar are reportedly nearing completion, to be followed later by others at Nigde Soke, Bartin, Batman, and Erzurum. Construction of an additional facility to be located at Sinap, is under consideration.

Total output of all Turkish plants in operation during 1957 was 1,261,197 metric tons, against 670,039 metric tons in 1956.

### '57 Production of Kaolin Second Highest in History

The domestic production of kaolin or china clay in 1957, according to reports of producers to the U. S. Bureau of Mines decreased 3 percent to 2,183,685 short tons in 1957 compared with 1956. Even with this decrease, 1957 showed the second-largest production in the history of the industry.

The paper, rubber, refractory, and pottery industries, in decreasing order, were the principal consumers.

The average value of domestic kaolin sold or used, as reported by producers, in 1957 was $16.30 per short ton, compared with $15.34 in 1956. Imports of kaolin for 1957 decreased to 134,307 short tons compared with 144,943 short tons in 1956.

# Columbia Quarry Co.

# Finds recording units boost

# Production, equipment efficiency

Since the installation of recording units on mobile equipment at the Number 1 plant, substantial gains have been experienced in production, efficiency, and accuracy of records.

**By C. H. KRAUSE**
Vice-president, Columbia Quarry Co.

ANOTHER P&D EXCLUSIVE

ONE of the most difficult operations for a quarry manager to maintain control over, in terms of production results and schedules, is stripping of spoil. While he can ascertain actual production of limestone or other quarried material by weighing after it is excavated, he often has reason to be concerned about spoil since it is usually dumped without passing through an unproductive weighing step.

This can be offset, if supervisory personnel are available, by actually observing the stripping operation to develop an estimate of the amount of work done by crew and equipment. Otherwise, operators' production reports for various machines must be accepted without a check.

The problem has been successfully met by Columbia Quarry Co. at one operation by the installation of recording units. At Number 1 quarry and plant in Columbia, Ill., a large shovel and four quarry haulage trucks are now equipped with Servis Recorders which have provided an accurate check on base production of this equipment and their crews.

About 10 months of experience with the recorders has indicated several benefits and the potential of more. An overall gain in production has been attained and a corollary increase in output per man-hour. This decrease in unit production cost—actual dollar savings—has been accompanied by improvements in an allied phase, that of maintenance scheduling.

At completion of an operator's shift, his recorder card furnishes valid evidence of work accomplished since side-sway of the equipment being operated causes a pendulum in the Servis Recorder to oscillate, and a stylus automatically marks the travel-line on a revolving wax-covered chart.

The idea of incorporating these units in the Columbia quarry stemmed from observation of their use on equipment in coal mines in the area. It was also learned that they had been used to considerable advantage for more than 40 years on over-the-road trucks.

(*Continued on page* 137)

E. A. Heise, superintendent of Plant Number 1, shown here checking a recorder installation on the cab of a haulage truck, has voiced considerable satisfaction with the results obtained with these units.

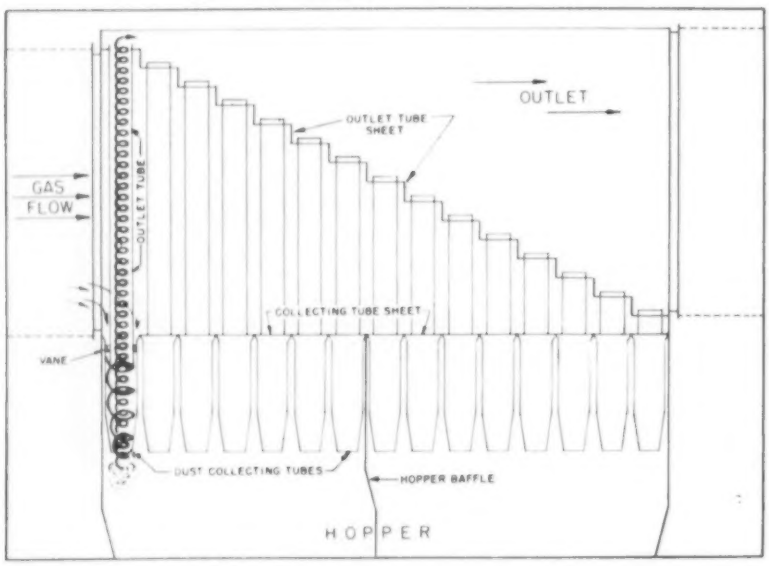
# Trouble-shooting

PREVENTIVE and corrective maintenance for mechanical dust collectors cannot be reduced to a fixed formula. Variation in material being collected, from one installation to another, and variation in layout, in operating techniques, and in-plant maintenance practices —all these may seriously affect collector performance. Gas and dust distribution, plugging, and wear constitute the greatest part of mechanical collector difficulties. Solutions are to be found primarily through a common-sense approach and a knowledge of the fundamental operating principles of mechanical collectors.

Mechanical dust collectors have been in use for many years, and a great deal of research on mechanical dust recovery systems has been performed in many countries (1) (2) (3) (4).* At times when the general consensus agreed that these systems had reached their optimum development, there have invariably been breakthroughs that again produced improvements, and these are continuing.

Because optimum collector performance (5) is dependent upon optimum operating conditions, maintenance trouble shooting is essential. By utilizing every outage period to make a careful inspection of the collector and its associated ducting, the engineering can often forestall trouble, or remedy it while it is still a minor problem.

Fig. 1—A typical multiple cyclone collector, shown in cross section.




Flue design between the primary equipment and the collector greatly affects the efficiency of the overall collections system. Ducts which produce poor gas or dust distribution can lower collector efficiency, and in many cases can accelerate wear far beyond the normal range.

Primary equipment employing dust collectors is now operating at higher average load conditions and for considerably longer periods of time between maintenance. As a result, close inspection of the collecting system is increasingly important. Minor conditions which are missed in one interior inspection may cause major difficulty by the end of the next maintenance period.

**Mechanics of Dust Collectors** Before the engineer can properly interpret the evidence presented by a careful interior inspection of a mechanical dust collector, he should have a sound understanding of the fundamental operating principles of the unit (6). From a standpoint of terminology, Figure 1 illustrates the various main components of a conventional multiple tube mechanical collector. Because of the high rotational velocity pattern created in the tubes, the unit is often referred to as a cyclonic collector (7).

Wide variations exist in the actual configuration of the various components. However, the basic principles of operation are common to all mechanical collectors.

The collector itself consists basically of four elements: a spin-pro-

*Numbers in parenthesis refer to similarly numbered references in bibliography at end of paper.

# Mechanical Dust Collectors

By **WILLIAM E. ARCHER**
Chief Development Engineer
Western Precipitation Corporation

ducing device, a collecting tube, an outlet tube, and hoppers. In the illustration, the configuration of the device imparting rotation to the gas is shown as a vane. However, it may take any one of several other forms. Its function is to accelerate and provide rotation to the gasses passing through each tube. This vertical action produced provides a centrifugal influence to separate the suspended dust from the gas stream.

The collecting tube is a cylinder in which the actual separation of the suspended dust takes place. A concentrated layer of dust forms at the periphery of the vortex, near the wall of the tube. An appreciable pressure gradient exists, expelling the dust from the bottom of the tube. This force is sufficient to provide good efficiencies, even with the collecting tube inverted (1).

Clean gases leave the collecting tube through an outlet tube. The components are mounted between tube sheets in such a manner that the gas stream is forced to pass through the entire bank of tubes operating in parallel.

The hopper is usually common to a large number of tubes, and the deposited dust is removed from the hopper by a dust-handling system.

**Effect of Duct Design On Collector Efficiency** Poor design in a duct system can greatly reduce the efficiency of a mechanical collector; in addition, inadequate design may impose serious wear on the elements of the collector.

In order to ensure that a dust collector will operate at peak performance and with minimum maintenance, dust and gas distribution must be kept as nearly uniform as possible. However, the dust concentration in certain areas of a flue is frequently several times the average dust concentration measured in the general gas stream. Yet such an area may show a satisfactory gas flow pattern. To provide best collection efficiencies, duct design must effect some compromise of these two parameters.

Considerable effort is being made today to reduce pressure losses in the design of large ductwork. Designers have adopted from wind tunnel studies the method of evaluating gas flow patterns to reduce wasteful turbulence to the minimum. This method has resulted in unmistakable savings in fan horsepower requirements.

Poor distribution is usually caused by the settling of the heavier dust particles during a long straight run, or by segregation of the dust, and gas due to changes in direction, where the greater inertial forces on the dust will separate it from the gas stream. Thus, improving the gas flow pattern may prove detrimental from a standpoint of dust distribution.

Turbulence, when induced in the proper location, is often necessary to disperse a heavy localized dust concentration. Creating turbulence in a gas stream generally results in an increased pressure drop. It can therefore be said that both gas and dust behavior must be considered simultaneously in designing flues and their associated turning vanes and gas distribution devices.

An excellent example of the effect of a change in gas stream distribution is shown in Figure 2. This shows the duct configuration between the air heater and the inlet of the dust collector for a large Eastern pulverized-coal-fired power plant. After the installation had been in operation for an initial period, an internal inspection was made of the unit and flues. This inspection revealed that the turning vanes installed following the air heater were satisfactorily reducing gas turbulence to the minimum in the first of two 90-degree turns (turn A). In the long, horizontal run through the duct, however, the inspection revealed that larger fly ash particles were settling to produce a heavy concentration just above the floor of the dust. This

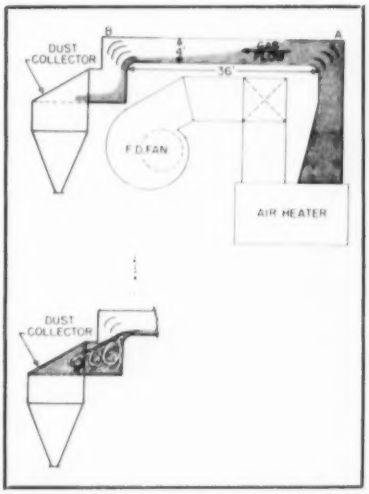



Fig. 2—Above: Particle settlement in 36-ft. duct and resultant stratification in turning vanes produced severe wear in the upstream half of the dust collector. Below: Removal of two turning vanes produced sufficient turbulence to provide good dust distribution throughout the collector.

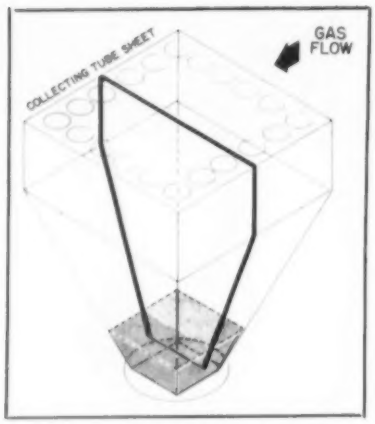



Fig. 3—A baffle installed in a dust collector hopper. The heavy line indicates the seal between the baffle and the shell of the hopper, which eliminates pressure differential flows.

was determined by the abrasion pattern on the vertical structural columns on the dust interior, and was substantiated later by filtration tests.

At the second change of direction (turn B), a double 90-degree turn to the inlet of the dust collector, the gas was found to change direction with the minimum of turbulence. However, at the turning vanes, the coarser material was passing under the lower vane and was further stratified by the second turn. This resulted in unusually severe wear on the upstream half of the dust collector.

The solution for this problem was found in removing the lower two vanes at turn B. As a result, turbulence was created to redisperse the coarse material. Later inspections indicated that the changes were quite effective in distributing the dust load more uniformly over the dust collector.

Any uniform restriction across the gas stream, with a resultant pressure drop, will improve the velocity profile or gas distribution (8). Because heavier dust particles have considerably greater inertia than the gas stream, a restrictive type of gas distribution device has little effect on dust distribution. A perforated plate is often used as a restricting device. The collector itself, a number of small diameter cyclonic tubes operating in parallel, will accomplish the same purpose very effectively.

Any indication of uneven dust distribution should be the first concern of an engineer making an internal inspection of a mechanical dust collector. A concentration of large dust particles tends to polish and erode the metal in a clearly defined pattern. Fine dust, on the other hand, tends to adhere to and build up on the steel to a certain extent, and it will reveal a great deal of information about turbulence and flow patterns within the system. Build-ups of dust on the floor of the duct show areas of low velocity. One of the best interpretive tools for the engineer is imagination, tempered with common sense. In effect, the engineer is a detective, searching for clues that will indicate potential trouble spots.

Turbulence can be induced by removing turning vanes or adding obstructions to the gas stream in the form of baffles. If baffles are used, the design and location are determined by the dust concentration pattern and velocity of the gas stream. The amount of obstruction presented by a baffle should be determined by the pressure drop required at that point.

**Effect of Hopper Circulation On Efficiency** Figure 3 shows the details of a baffle installed in a dust collector hopper. This baffle divides the row of tubes approximately in half in the direction of gas flow. It is sealed around the sides and to the collecting tube sheet, and extends down to within a short distance of the hopper outlet. As dust settles from the collecting tubes, the hopper is sealed off into two separate chambers.

The purpose of this baffle is to reduce gas flow in the hopper, which would impair the efficiency of the collector. In passing through the collector, the gases are forced to go through a number of tubes or equivalent ductwork to reach or leave the collecting elements. The pressure of these gases, as they enter the collecting vanes, is therefore not equal throughout the unit. Because of the varying lengths of the outlet tubes and the losses in the outlet header, a further inequality of pressure occurs. In a common hopper, appreciable currents may be set up as the gases attempt to equalize these pressure differentials.

The ideal solution to the problem would, of course, be individual hoppers for the collecting tubes. Since this is usually economically unfeasible, hopper baffles are used in an attempt to reduce the circulation caused by unequalized pressures.

Unfortunately, many engineers have opened a collector for an inspection and decided that the hopper baffle was interfering with evacuation of the hopper. Removing the lower portion of a baffle to aid in emptying the hopper can result in lower collection efficiency until the hopper dust level rises sufficiently to form a seal.

Since the majority of today's dust collectors operate under negative pressure, outside air infiltration into the hopper of a smaller unit can be a definite contributor to poor collection efficiency. This infiltration could occur through a leaking dust valve on the hopper exit, or through flange joints or access doors. The same effect can be noted when there is a leaking joint between the collecting tube and the collecting tube sheet. In this case, gas will by-pass the vane and the collecting tube to enter the hopper. Any flow into the hopper results in an increase in the hopper pressure in relation to the inlet pressure, which decreases the hopper ratio (see appendix). If these conditions exist to a sufficient extent, the critical hopper pressure ratio may be reached, and certain areas of the collector may cease to function.

**Pluggage** Mechanical collector difficulties often arise from pluggage of one or more of the components with solid build-up of materials (7). One serious effect follows when the vane or spin-producing device is plugged (Figure 4). When this condition evists, there is no longer a dust seal created in the collecting tube by incoming gases. As a result, an open passageway is developed between the hopper and the outlet housing through the collecting tube and outlet tube.

There is always a very dense concentration of suspended dust in the hopper. This concentration may be many times greater than the dust concentration in the main gas stream entering the collector. As

such a passageway to the outlet housing opens, this hopper dust is pulled into the stream of cleaned gas in the outlet housing. The pluggage of one collecting tube inlet can remove more material from the hopper than many properly operating tubes can collect. When this condition exists, performance of the collector will be radically reduced.

High vane velocities are necessary in any mechanical collector. As a result, the passageways are small in relation to the gas volumes. There is little tendency toward pluggage in these small cross sectional areas, under ordinary conditions. The difficulty arises, however, when the collector is subjected to sticky material which tends to adhere upon impingement, building up an obstruction. Material which builds up on the duct walls, on the underside of the outlet tube sheet, and on the face of the outlet tubes can break away and fall into the vanes, clogging them. If this condition is discovered, extreme care should be taken at every opportunity in cleaning the vanes carefully, and if possible, steps should be taken to correct the circumstances which produce such a condition. One of the most effective counter-measures is to maintain gas temperatures sufficiently above dew point to prevent agglomeration (9) (10) (11).

The most common type of pluggage in mechanical dust collectors is in the collecting tubes. It is usually caused by permitting the hoppers to overfill. When the dust level is allowed to rise in the hoppers until it closes off the bottom of the collecting tubes, the dust will build up within the tubes until equilibrium is reached. At this point, velocities are high enough to carry incoming dust throught the tube and out the outlet tube.

Evacuation of the hoppers after this has occurred may not clear the tubes. If the dust has a tendency to pack during the time the hoppers are overfilled, it is possible that the tube will remain plugged after the hopper has been emptied. In such cases, if the tubes are not cleaned out, very serious wear will occur because the top dust layer is rotating at high velocity in one localized area in the collecting tube. The plugged tubes are, of course, operating at zero efficiency and should be cleared by rodding or air lancing as soon as possible after the condition is discovered.

In some cases it has been found that collecting tubes will plug in normal operation. This common solution for this is to install a means of vibrating the collecting tubes periodically.

Outlet tubes rarely plug in normal operation. The only exception occurs when both the vane and the collecting tube are plugged. In this case the outlet tube would eventually fill with dust. This is not a serious condition since the tube is completely removed from service. If an appreciable number of tubes should become plugged, however, the pressure drop across the dust collector will increase due to a reduction in the number of tubes in operation.

Some difficulty has been experienced with plugged outlet tubes on oil-fired boiler dust collectors. In such a case, one solution is to suspend a chain in the center of the tube. The swirling gas stream effectively swings the chain to scrape the tube walls clean, and the loosened material will fall through the collecting tube into the hopper.

**Dust Disposal Problems** If plugged collecting tubes are found to be a common occurrence, improvement should be made in dust disposal (13) (14). The installation of a bin level indicator may be warranted (7).

Slight amounts of moisture in collected dust will cause it to pack into an inert mass. Continuous or more frequent dust disposal often aids in preventing this problem, but insulation is usually more effective in removing the cause.

When the gas temperatures are lowered to near the dew point, it is vital that the hoppers be well insulated. In severe cases it has been necessary to heat the hopper walls to prevent condensation.

If the dust is very fine or has a great deal of cohesion, vibrators can be used to improve the removal of dust from the hoppers. If the hopper walls are insulated, care must be taken to ensure that vibration does not damage the insulation. Effective results are often obtained by vibrating an internal hopper baffle or an auxiliary baffle located near the outlet of the hopper.

Aeration, if used carefully, will aid hopper evacuation. Misuse of this method is common, however. Too much air will re-entrain the collected dust. Leaving an air lance on for prolonged periods will not only result in reduced performance, but will cause severe abrasion in the immediate area of the air blast.

Condensation on start-up may also contribute to hopper pluggage. On a boiler installation, unusual amounts of moisture in the hoppers may be caused by a boiler tube failure or by washing the air heater during operation. After any such unusual occurrence the dust collector hoppers should be carefully

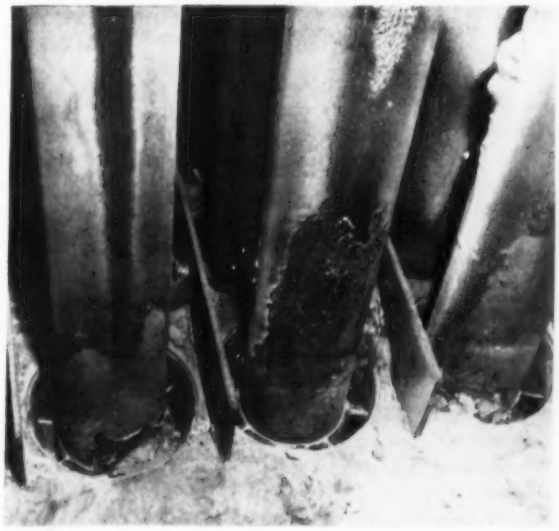


Fig. 4—This illustration shows typical collecting vane pluggage in a mechanical collector, which may be caused by agglomerated dust falling from the exterior surfaces of the outlet tube (see tube at right) or from the under side of the outlet sheet.

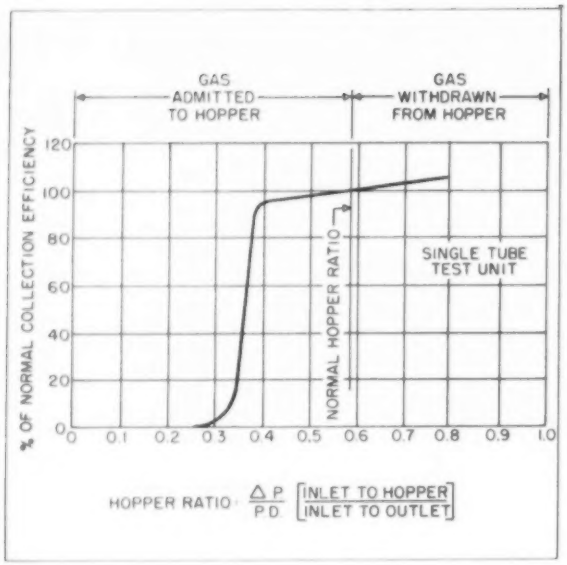



Fig. 5—The effect of hopper circulation on collection efficiency is shown in this graph. The critical parameter was determined to be the hopper pressure ratio (ratio of differential pressure between the collector inlet and the hopper divided by the total differential pressure across the unit). The point at which the efficiency dropped sharply toward zero is seen to be 0.39.

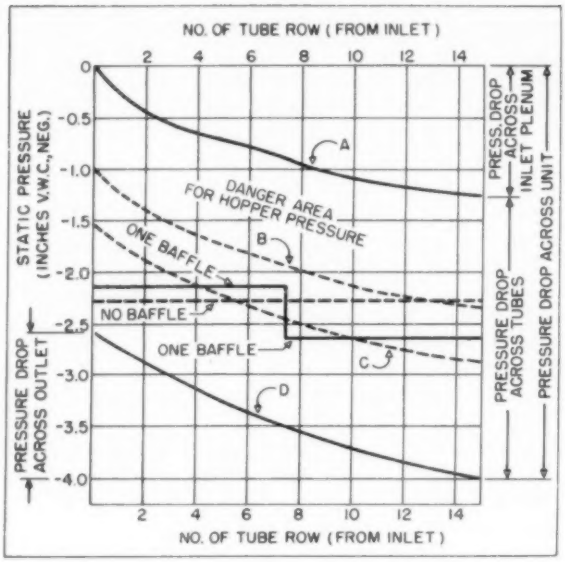



Fig. 6—A test of hopper pressure ratios was performed with a test unit of 15 tubes in the direction of gas flow. The graphic effect of a baffle upon hopper pressure is shown: A—static pressure entering collecting tube; B—critical hopper pressure (ratio 0.39); C—hopper pressure with individual hoppers for each collecting tube (ratio 0.58); D—static pressure leaving outlet tube.

checked to discover whether plugging has occurred.

**Wear** Erosion in a mechanical collector is usually of two forms—either impingement wear at the inlet of the unit, or erosion of the collecting tube and vanes. Dust distribution in the duct will be indicated through impingement wear at the inlet of the unit. Poor distribution may cause severe erosion in localized areas. If dust distribution to the unit is satisfactory and erosion is still a problem, the only solution is to provide sacrificial material to protect the collector. This can usually be accomplished with replaceable angles and plates to absorb the worst of the wear (7).

Any piece of equipment designed to handle large quantities of abrasive material may be expected to have a finite life expectancy. In order to obtain maximum service with minimum maintenance, it is desirable to distribute the wear evenly over the entire group of tubes. Under conditions of extreme abrasion, it is sometimes desirable to use special alloy materials in the construction of the collector.

For applications in which extremely high temperatures and abrasive conditions exist, castable ceramics and a combination of special alloys are sometimes required. Every effort is made by dust collector manufacturers to anticipate severe conditions which may be encountered and to design specific units to withstand these conditions.

It is sometimes found, however, that actual conditions present problems which could not be foreseen. After a period of normal service, an internal inspection may show that modifications are needed to enable the unit better to withstand wear.

**Conclusion** Since almost all problems which arise in a mechanical dust collector leave a visible indication, the engineer is primarily a detective, looking for evidence of subnormal performance. As he makes inspections during outage maintenance periods, minor damage or improper operation can be detected and remedied.

The most useful tool, therefore, is keen observation. Since all of the parts of a collector are static, the clues left by operating conditions ordinarily remain to be read on shutdown.

The majority of mechanical collector problems fall into two classes: pluggage due to hopper overfilling, and accelerated wear resulting from poor dust distribution in the gas stream. Each of these major causes has been examined and suggestions have been made for remedial action.

Peak performance of a collector is dependent upon its proper operation. Improperly designed ducts can cut the efficiency of the collector to a level far below the minimum anticipated by the manufacturer. Poor gas distribution can cause disturbed pressure patterns in the collector proper, and poor dust distribution can cause localized spots of accelerated wear and high maintenance costs.

Since there is a continual increase in community concern over pollution and its causes, efficiency is a major consideration of the engineer. Contaminated stack discharges resulting from overfilled hoppers or from a worn collector can lower the efficiency below minimum operating requirements.

By careful inspection, and by immediate correction of adverse conditions, no matter how minor, the engineer can practice preventive maintenance to ensure continued efficient operation.

## APPENDIX

Laboratory tests were conducted on a single tube unit to determine the effect of hopper circulation on collection efficiency. Figure 5 illustrates typical results that were obtained. The test was conducted with controlled amounts of gas being admitted into and withdrawn from the hopper.

It was determined that the critical parameter was the ratio of the differential pressure between the collector inlet and the hopper divided by the total differential pressure across the unit. This was defined as the hopper ratio.

It can be seen that in the particular configuration with no gas flow into nor out of the hopper, the "normal hopper ratio" was 0.58. The point at which the efficiency dropped sharply to zero, for all practical purposes, was 0.39. At that value, dust was re-entrained.

(The critical hopper pressure given here is a value applicable only to the particular vane, collecting tube, and outlet tube configuration used in the test. It is not to be considered a universal value, but is used only to illustrate specific results obtained in this test series.)

Tests were then conducted on a special unit with 15 tubes in direction of gas flow. These tubes were the same configuration and size as the single tube test unit.

Static pressures was measured at the inlet of each collecting tube and at the outlet of each outlet tube. The results of these tests are shown in Figure 6. The critical hopper pressure (ratio 0.39) is also shown.

It can be seen that without a hopper baffle the critical hopper ratio is reached at 13 tubes in the direction of gas flow. With a baffle seal between the seventh and eighth rows of tubes, an adequate but not excessive margin of performance capability is achieved. The pressure is maintained within the proper operating limits.

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## Columbia Quarry Co.

(*From page* 131)

E. A. Heise, superintendent, reports his complete satisfaction with the results of these installations. He has said that they are doing a good job for us not only in the off-the-road stripping operations, but in all other phases in which they are brought into play.

We therefore intend to put similar instruments into all of our operations, since we feel that all mobile equipment in either part- or full-time use around our eight quarries can thus be more efficiently employed. At our Number 1 plant we are determining what equipment should carry a recorder at all times, and those in which only periodic installation in indicated. Currently, they are in use on shovels, Tournapulls, and Euclid trucks.

Two 8-hour shifts are worked at this plant. The recorders have resulted in cutting down certain idle time formerly experienced with the trucks, and there has been a gain of three more loads per haulage unit in the morning, alone. With eight trucks working, this gives us another 75 tons moved per day per truck. In total, we move up to one and a half million tons of limestone in a year, plus nearly a half million tons of clay and weathered limestone overlay spoil.

We are now also evaluating the effectiveness of the recorder charts in the area of equipment maintenance and service. We wish to use our equipment at least 90 percent of the time, and it must therefore be kept in sound mechanical condition. We have been informed that the same recorders—since they register the hours each vehicle is actually in use—will aid us in computing service hours and hence the basis for maintenance of the equipment. Guesswork will be eliminated, and maintenance can be scheduled so as to avoid too much down time or too much equipment in the repair shop at one time.

The recording units were easily installed—one of our mechanics merely bolted each one to the wall of a vehicle cab. No wires, pens, or ink are involved, and all the supervisor has to do to start the record is to insert a chart and wind the clock movement. A Yale lock prevents opening of the unit by unauthorized persons. When it is opened, the stylus marks the time it was unlocked and locked.

Esprit de corps at Columbia is good, and we believe that the recorders will promote operator morale. A conscientious worker likes the unit on his outfit since it is completely impartial and shows his supervisor that he is competent. If he is doing more than his share of work, he knows that recognition will be given.

One of the most modern cement plants in the country, Riverside Cement Company's Oro Grande (Calif.) plant, shown here in an aerial photograph, will be further modernized with the installation of a digital control computer system. This setup will facilitate production of more cement, achieve more uniform quality, and result in lower operating costs.

# Digital Computer to Automate

AUTOMATION — 100 percent automatic operational control — is the current goal at the Oro Grande, Calif., dry-process plant of the Riverside Cement Company, a division of the American Cement Corporation.

With a new, fully-mechanized crushing and rock-blending system nearing completion and scheduled to go into operation in January, 1959, the first and major step in the program of automation will be the installation of an RW-300 digital computer to regulate the new rock-blending facility.

The electronic computer, built by Thompson-Ramo Wooldridge, Inc., will also provide information to guide quarrying operations. It is expected to be functioning fully by the spring of 1959, at about the time the plant's kiln capacity will also be increased. Present clinker capacity at Oro Grande is just over 5,000,000 bbl. annually.

According to J. M. Kinard, president of Riverside, the use of the digital control computer, which will be installed at a cost of $130,000, will enable the plant management to solve complex control problems rapidly and automatically. "It will allow us to operate the plants more efficiently, and will help us produce more cement, of more uniform quality, and at a lower operating cost," Mr. Kinard reports.

The computer, in addition to its control functions, will collect and analyze data needed in planning other automatic control systems for the entire plant. Riverside's long-range objective is to utilize automation techniques wherever they will make possible higher product quality, lower operating cost. . . or both. The RW-300 system can be expanded through minor field modifications in the future to attain these goals.

Purchase of the transistorized computer followed a 6-month application study. The planning was done jointly by Riverside's technical staff and the Thompson-Ramo-Wooldridge Products Company of Los Angeles, which specializes in industrial control and data-handling systems.

Initially, the electronic "brain" will confine its efforts toward control of stockpile blending and selective quarrying, according to Dr. J. F. Manildi, general manager of Thompson-Ramo Wooldridge Products. The computer will keep track of the quantity, the chemical composition, and the point of origin of thousands of tons of limestone and other raw components delivered to Riverside's new blending facility. Periodically, it will calculate how much of what kinds of raw materials and how much should be added to the pile to obtain proper proportions of kiln feed. The computation will also indicate the most economical procedure to follow on the basis of such factors as hauling distances and cost of quarrying from various faces worked in the extensive Oro Grande deposits.

As at present, analysis of raw-material samples will continue to be made by X-ray spectrometer at the Oro Grande laboratories. The RW-300 computer will automatically bring in data from the spectrometer and will perform all necessary cal-

## *Riverside launches impressive program at Oro Grande, Calif.*

# Cement Rock Crushing, Blending

culations and calibrations. Riverside has pioneered in the use of the X-ray spectrometer in the cement industry.

Besides making control computations, the computer will log data from the plant's rotary kilns. It will provide accurate and continuous records of such variables as temperature, fuel, gas flow, and speed of rotation.

The RW-300 is said to be the first digital computer designed specifically for automatic process control, data logging, and test-facility operation. Built-in analog-digital conversion equipment permits it to be connected directly to indicating instruments and regulatory devices such as those mounted on the kiln-control boards.

The computer system, the crushing-and-blending system, and increased kiln capacity are the latest in a series of improvements at the Oro Grande plant. After World War II, Riverside launched an extensive modernization program at the plant and followed through with a continuing improvement and expansion schedule. Very little remains of the original plant, purchased in 1923 from the old Golden State Portland Cement Company.

A broad program of improvements is also currently being undertaken at Riverside's Crestmore plant, located about 50 miles south of Oro Grande. A new plant is also under construction at Clarkdale, Ariz., with completion scheduled for late 1959 or early 1960.

John M. Sauer is superintendent and Howard R. Starke is vice-president and technical director.

A digital control computer similar to the one shown here has been purchased by Riverside Cement Company. Riverside officials say it is the first step toward fully automatic control of the company's Oro Grande (Calif.) plant, since it will guide the operation of a completely mechanized rock blending facility.

This view from finish-screening building shows the crushing tower (right) and the conveyor (left) leading from the primary crusher to the surge pile.

By HARRY F. UTLEY

# New Owl Rock Plant

ANOTHER ON THE SPOT REPORT

WHEN years of large-scale mining began to give evidence of depletion in the gravel and sand reserves of Owl Rock's Monrovia plant in the San Gabriel Valley, east of Los Angeles, a foresighted management was able to acquire title to 100 acres of excellent deposits at the foot of Santa Fe Dam. The tract was located within the boundaries of the town of Irwindale and a scant few miles east of the old Monrovia plant, and the firm moved rapidly to design and construct its new plant on the site.

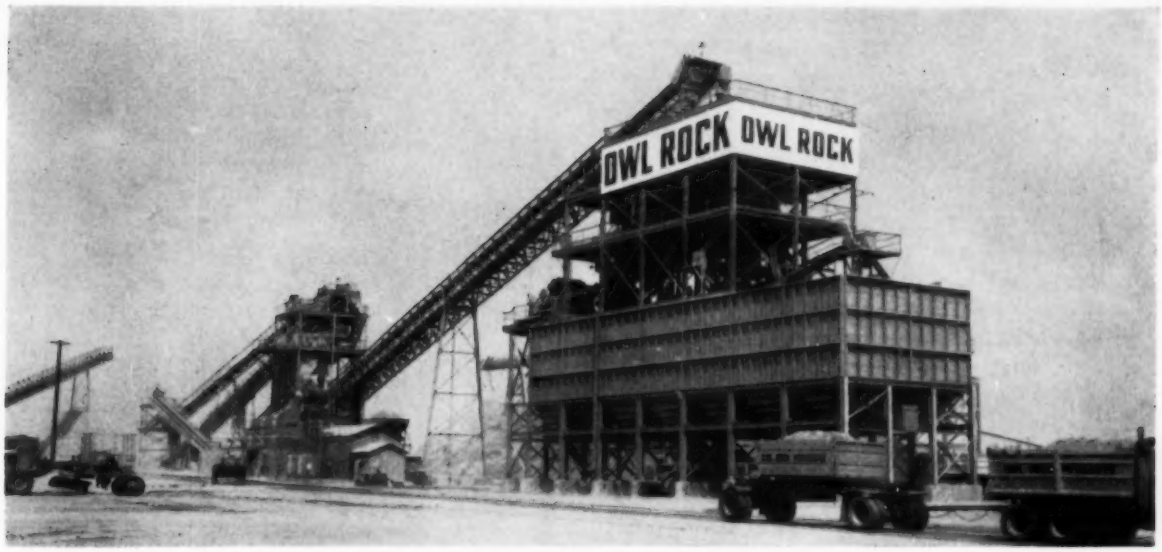
This most modern facility has a capacity of 800 t.p.h. and is now nearing the close of its first full year of production. Excellent design and a straight-line processing scheme have paid off in the form of a remarkably smooth-performing operation. Close to a million and a half tons of specification material has been produced and sold during the initial 12-month period.

Interesting features of the new plant, which is of steel and concrete construction in its entirety, include the following: surge-piling of primary-crushed pit-run product to keep the pit and plant supply in balance; seven separate truck-loading bin stations beneath the finished-product bunkers to eliminate driver delays; a system of fog nozzles at strategic locations to allay dust emission; and the concentration of all the reduction crushers at a single station to simplify servicing and maintenance.

Three bottom-dump Euclid trucks transport 26-ton loads from the pit to the plant hopper, a haul of slightly more than one-half mile. The excavating machine, a Bucyrus-Erie 120B electric shovel with a 2300-v. primary motor and swinging a 5-cu. yd. bucket, can load one of the big Eucs in three or four bites. From the hopper, a 48-in. by 120-ft. belt conveyor carries to a 5-in. sloping grizzly ahead of a 30- by 42-in. Pioneer primary jaw crusher, set to break at 5 or 6 in. Grizzly throughs and the crushed product then travel up a 42-in. wide belt to build the surge pile, which is 80 ft. high at its apex. The pile has a capacity of about 50,000 tons and an available live-storage supply capable of caring for three or four days' full production in the plant.

A concrete and corrugated-metal tunnel beneath the surge pile houses a 36-in. by 400-ft. reclaiming conveyor, fed by a Jeffrey 36-in. vibratory feeder. The belt inclines upward to the crushing and primary-screening tower, where initial processing tanks place. Two 6- by 12-ft. Allis-Chalmers triple-deck screens on the upper level of the tower operate in conjunction with four Symons cone-crushers arranged in line below. The first of these screens normally will take out the gravel larger than 1⅝ in. on the multiple decks, scalping off to three of the crushers, a 4¼-ft. and a 3-ft. standard-bowl unit, and a 4-ft. short-head with a medium bowl. Throughs are wet-processed later on to yield washed gravels and sands.

Product of the three crushers is conveyed to the second 6- by 12-ft. screen in a closed circuit, with the fourth cone-crusher, another 4-ft. short-head unit, reducing surplus



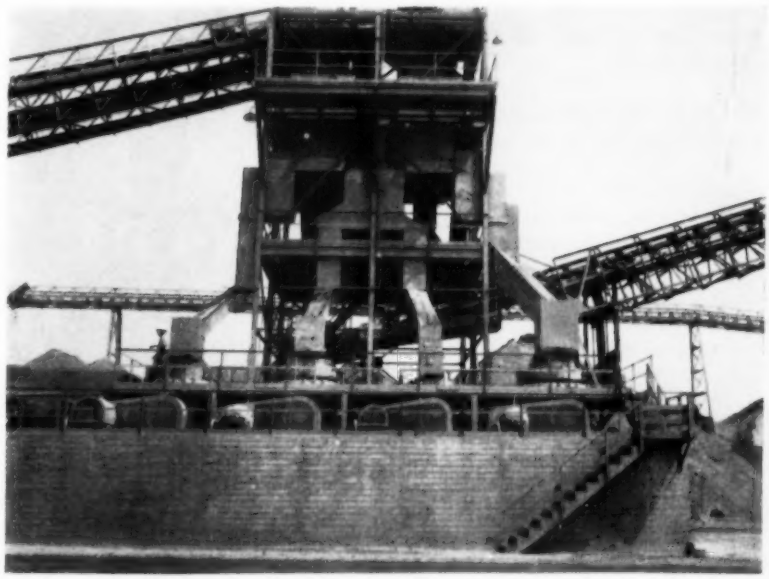

Owl Rock's new 800-t.p.h. Santa Fe plant, located in the San Gabriel Valley, east of Los Angeles. The 14 truck-loading bins have combined capacity of 2,800 tons.

# Boasts 800 T.P.H. Capacity

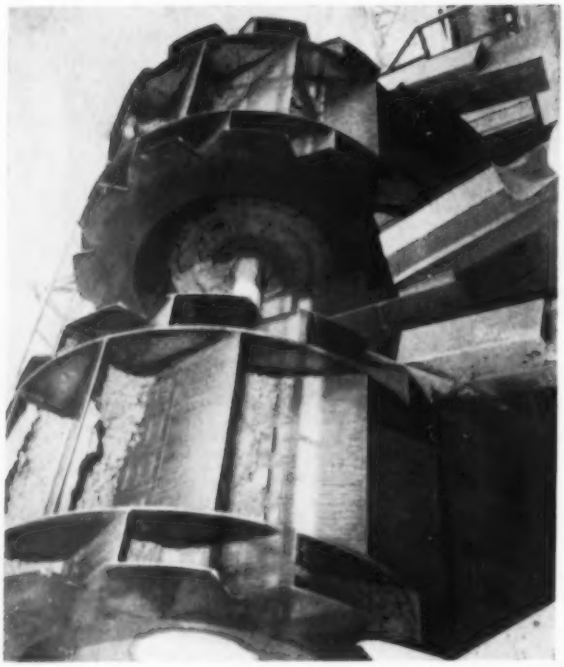
oversize. All four crushers discharge product to a 30-in. common belt conveyor for return to the screen. The resulting output at this stage, ordinarily not in excess of 1¾ in. top size—(1) the natural gravel and sand, and (2) the crushed gravel, including all crushed fines—are carried separately by a pair of parallel belt conveyors to the finished-product department high above the storage bins.

**Crushed Gravel** The crushed material is split-fed to a pair of 4- by 14-ft. Symons double-deck screens which dry-size the plus 13/16-in. products. Throughs pass on to a following pair of Symons 4- by 12-ft. dry-sizing screens, followed by a set of two Tyler Hummer screens equipped with 3/32-in. slotted mesh. The fines passing the screen decks, called "dust," are in constant demand among industrial and construction firms, and the crushers are carefully regulated and controlled to "up" the yield of dust to the maximum without unbalancing production down the line.

**Washed Gravel** Except that it is equipped with washing sprays, the main screening complement on the "wet side" in the finished product department is the same as on the dry side—two 4- by 14-ft. and two 4- by 12-ft. Symons horizontally-operated screens. Optionally, however, one of the larger screens may be by-passed in favor of a Symons rod-deck screen which can take out unwashed nat-



The scalping screens are above the cone crushers, which are arranged in line to discharge to a common return belt-conveyor.



Above: Looking down on the two sand classifying and wewatering wheels. Notched side buckets were added to gain capacity and improve recovery.

Right: A yard crane mounted on 14 pneumatic tires keeps the truck-charging bins full of sand, eliminating loading delays.

ural sand. This type of sand, containing small amounts of colloidal material naturally present in the pit-run product, is used for the most part by asphalt plants and pipeline construction. There is also a small Owl-designed single-deck screen in the pea-gravel circuit which extracts 5/16-in. gravel, a product much preferred by concrete-block makers instead of the plan-run pea gravel which has a slightly larger top size of ⅜ in.

**Washed Sands** Both concrete and plaster sands are produced by a pair of Conveyco sand wheels which have been modified by adding notched side buckets to increase capacity and improve recovery of fines in the tubs. The dewatered sand from the wheels is carried by a 24-in. by 140-ft. belt conveyor to a transfer point, where it is picked up by a 24-in. by 270-ft. conveyor running in a gallery above the storage piles. Five plows on this belt distribute the sand for drainage. The pile has a total capacity of 25,000 tons, and there is an 8-ft. reclaiming conveyor tunnel below the piles to transfer the sand to loading bins *via* a bucket elevator.

The 12 standard sizes ordinarily in production are as follows:

Crushed
1¾ to 1¼ in.
1¼ to 13/16 in.
13/16 to ⅜ in.
⅜ to 7/32 in.
7/32 to 3/32 in.
—3/32 in. (dust)

Washed
1⅝ to 1⅛ in.
1⅛ to ⅜ in.
⅜ to 5/16 in.
5/16 to 7/32 in.
—7/32 in. (concrete sand)
—⅛ in. (plaster sand)

There are 14 steel truck-loading bins, which are filled by chutes from the sizing screens overhead. Total capacity is 2,800 tons. These bins are arranged in pairs and some are compartmented, making it possible to spot seven delivery units simultaneously under the bin structure gates. Special dual gates drain accumulated water to the waste-water main so that the area beneath the bins is comfortably dry at all times and muddy drip on the delivery units is avoided. Each driver, incidentally, is provided with a special dust cloth and is required to wipe off his vehicle upon approaching the scales on each delivery.

Wash-water requirement of 1,600 g.p.m. at 80 lb. pressure is met by pumping from a 300-ft. 16-in. cased well with a 10-in. discharge line. The Layne & Bowler pump is powered by a 200-hp. G-E Tri-Clad induction motor.

It is of interest that the various discharge and transfer chutes of the plant are riffled to retain a layer of material on the bottom, to combat chute wear. Another interesting practice observed at the plant was the use of ½-in. thick pure rubber strips (without reinforcing fabric) to form skirt boards on conveyors and feed boxes. It has been found that the higher first cost of the rubber is more than justified by long life, accurate alignment, and ease of adjustment. This is in contrast to the conventional use of strips of old conveyor belting for this purpose, which need frequent attention and replacement. The rubber skirts are held in place by special

Right: One of Owl's 42 truck-telescopic trailer units being weighed out at the scalehouse on the 70-ft. scale platform. The 22-ft. platform (right) is for shorter trucks.

Below: The sand conveyor is fitted with five plows to distribute the material into a long pile for drainage. Storage capacity is about 25,000 tons.

Owl-designed clamps which make it unnecessary to slot the rubber and bolt through.

The scalehouse floor is elevated sufficiently to permit the scalemen to observe the loads and ascertain the type of material being carried as they are checked out. There are two separate weighing units. One has a 70-ft. platform to accommodate the longest truck-trailers; the other, 22 ft. long, is used for shorter wheelbase trucks. Owl Rock operates a fleet of about 50 delivery units of its own, including 42 trucks with telescopic trailers, each rig having a total payload of 25 tons. A 2½-cu. yd. Osgood crane with 50-ft. boom loads from stockpiles, etc.

Other yard equipment includes the following units: 20-ton Kenworth end-dump trucks which haul from the bins to open storage; two 3¼-cu. yd. skip-loaders; two 1½-cu. yd. Northwest shovels; and a sprinkler truck which lays dust on plant roadways. A well-equipped testing laboratory in the firm's own building at the plant is effective in maintaining quality control of all materials. The lab is always available to state, city, and county engineers and inspectors who might wish to carry on their own tests.

The parent firm, Owl Truck & Construction Company, maintains headquarters in Compton, Calif. In addition to the above-described plant, it also owns Service Rock Company of Riverside, Calif., operator of three aggregate plants and seven ready-mix batch plants in that general area. Company activities also embrace heavy construction, trucking, a crane-rental service, industrial rigging, oil-well drilling—even the breeding and racing of thoroughbred horses!

Founder of this diversified and complex business organization was Dewey Burden, who died unexpectedly on March 31, 1958. His son, Joseph L. Burden, now heads the concern. John Kerfoot is executive vice-president.

H. N. Goodreau, vice-president, manages the Owl Rock Products Co. Division, which also includes a 500-t.p.h. base-material plant near Montebello, Calif. C. A. Peterson is superintendent of the new Santa Fe plant.

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### Canadian Gypsum Company Plans Large-Scale Expansion

The Canadian Gypsum Company Limited, Toronto, Ont., has announced a multimillion-dollar expansion plan for its plants at Hagersville and Guelph, Ont.

G. A. Long, director of sales for Canada, stated that the Ontario expansion program called for additional gypsum manufacturing facilities at its Hagersville plant and for a substantial expansion of lime capacity at Guelph.

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The Georgia Marble Company of Tate, Ga., in its explorational core drilling program at the Willingham-Little Stone Company Division, Whitestone, Ga., has reported drilling vertically to a depth of 700 ft. in the Murphy marble bed. This is reportedly the deepest penetration ever made in that formation.

A general view of the Gainesville plant, with the primary conveyor, scalping tower, and surge stockpile (left). At the right is the screening and storage tower.

# Virginia Trap Rock Plant—

ANOTHER ON THE SPOT REPORT

By WALTER E. TRAUFFER

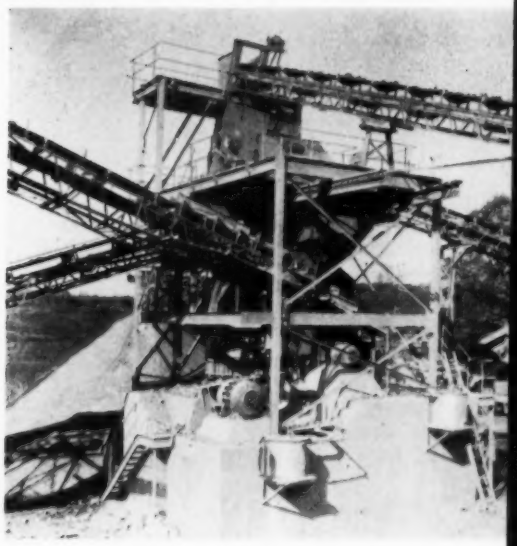
ONE of several new aggregates plants which were built in 1958 to supply the needs of the rapidly developing area west and southwest of Washington, D. C., is that of the Gainesville Stone Quarries at Gainesville, Va. This plant was built primarily to supply material for an asphalt plant for the General Asphalt Company of Gainesville but also supplies general business for this area. It has a capacity of 125 t.p.h. of minus 1-in. material and considerably more when larger sizes are made. The asphalt plant uses 600 to 700 t.p.d. when operating at capacity.

In looking for a suitable location for the quarry, the management found that this deposit, which had once been worked by the state, seemed suitable. A thorough drilling of the area confirmed the existence of an adequate supply of the trap rock native to this area. Basic specifications for the plant as to capacity and products were supplied to Robins Engineers, designers of the plant.

Because of the limited open area, the plant had to be compact; it had to be able to produce at least 100 t.p.h. of asphalt sizes and at other times to make a range of sizes up to 1½-in. and sometimes 2- or 2½-in. These requirements necessitated flexibility and ample crushing capacity, and the new plant has both. Construction was begun on November 15, 1957, and the plant went into operation April 1, 1958. Much of the equipment for this plant, including feeders, screens, conveyors, and screen cloth was supplied by Hewitt Robins.

The Gainesville quarry is being developed into a hill (left). This shot shows a shovel, trucks, and the drill.

**optional surge stockpile**
**flexible flowsheet**
**features of Gainesville facility**

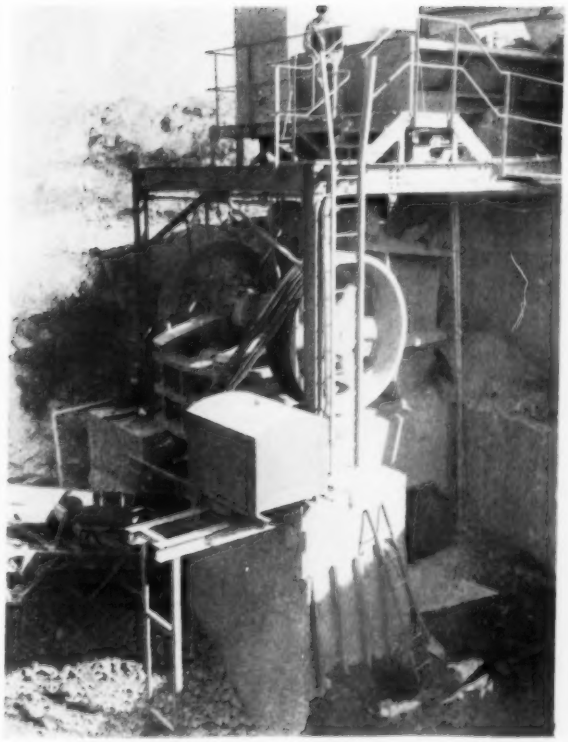


The scalping tower, with the screen above and the secondary and tertiary crushers at the left and right, below.

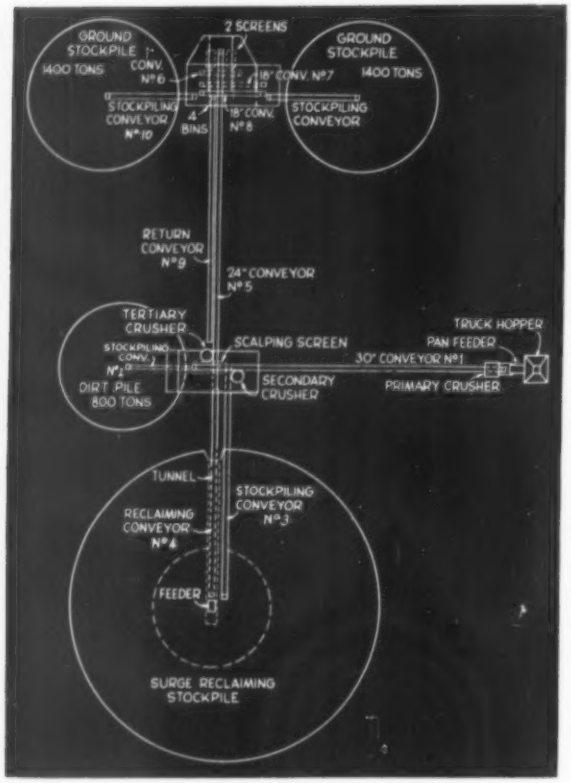
# Built Primarily for Asphalt Plant

The deposit, a hard, abrasive trap rock found in this area, meets all specifications for concrete aggregates, etc. It has a Los Angeles abrasion test of 13.63 and a specific gravity, dry, of 2.887. The sidehill formation is somewhat broken at the edge but becomes more solid as the quarry is developed back into the hill. The rock outcrops in places, and there are a few clay pockets at the surface. The overburden of clay ranges up to 15 ft. in depth and is removed off season with the quarry shovel and trucks. The face will ultimately be about 30 ft. in height.

Drilling is done with a Chicago Pneumatic GD800 Tracdril, which has a self-air-powered track-mounted chassis mounting a 4-in. piston drifter drill. Timken and Brunner-Lay X-bits with carbide inserts are used to drill 2½-in. holes spaced 7 by 7 ft. They are loaded with Hercules Gelamite 1, Gelamite D, and some 60 percent in the bottom of the hole. Shots usually consist of



The 32- by 42-in. jaw primary crusher, with the hopper and apron feeder at the right.




Plan view of plant shows compactness of design and use of ground stockpiles for storage.

40 to 50 holes in 3 or 4 rows, millisecond delays are used, with detonation from a battery or a 440-v. power line. The yield is about 2.5 tons per pound of explosive. Breakage is generally good, but some secondary shooting is necessary. Jackhammers are used for this, with air from an Ingersoll-Rand 315 portable compressor.

Loading at the face is done by a Manitowoc 1600 shovel with a 1¼-cu. yd. dipper and powered by a Hercules gasoline engine. Two Autocar trucks with Galion 12-ton rear-dump quarry bodies haul about 1,000 ft. and up an incline to the plant hopper, which can receive material from three sides. A pushbutton-controlled 48-in. by 13-ft. Hewitt-Robins apron feeder discharges the stone into the 36- by 42-in. Traylor HB Special jaw primary crusher. The minus 4-in. stone from the crusher is carried on 30-in. by 142-ft. conveyor No. 1 to the top of the scalping tower. There it is discharged on a 5- by 12-ft. Hewitt-Robins Style M11 Vibrex screen with 2-in. and 3-in. wirecloth.

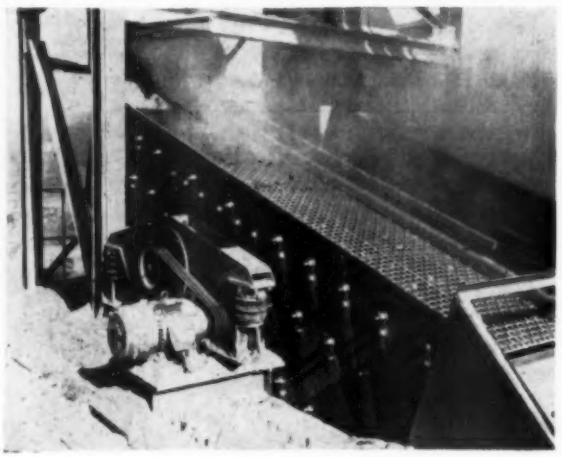
Material over both decks can go either direct to the secondary crusher or to the raw surge stockpile, or it can go either way. Usually material from both decks goes to storage. It is chuted to a stone box feeding a 30-in. by 104-ft. stockpiling conveyor (No. 3), which discharges over the top of the concrete reclaiming tunnel. The resulting stockpile has a total capacity of about 8,000 tons, but only the 1,500-ton live capacity is used. This conveyor is mounted on a cantilever steel framework which is clear of the stockpile and not subject to any stresses of shifting material.

A 100-t.p.h. Model F45 Syntron vibrating feeder reclaims the stone to 30-in. by 89-ft. conveyor No. 4, which feeds to the secondary crusher. This is a 4¼-ft. Symons standard cone crusher set at 1½-in.

The minus ¾-in. material through the bottom of the scalping screen also has two optional flows. At present it usually contains enough clay and earth for a good base material for roads, driveways, etc. It is discharged by 24-in. by 28-ft. boom conveyor No. 2 to an 800-ton ground stockpile.

If there is no dirt in this material, it is discharged from the screen *via* a chute to a stone box which also receives the product of the 4¼-ft. cone crusher. This minus 1½-in. material is carried on 24-in. by 149-ft. belt conveyor No. 5 to the top of the screening tower. There the material is split to a pair of 4- by 14-ft. Vibrex 3-deck screens (No. 2 and 3). One of these has 1½-in., ¾-in. and 8-mesh wirecloth; the other has 1-in., ½-in. and 8-mesh cloth. Oversize from both is chuted to 18-in. by 108-ft. conveyor No. 9 back to the scalping building. This material is reduced to ¼-in. and under by a 3-ft. Symons short-head cone crusher and discharged back on conveyor No. 5 for rescreening.

Material retained on the second deck of either or both screens can also be fed to the 3-ft. crusher on conveyor No. 9 or discharged by an



One of the two 4- by 14 ft. 3-deck screens which do the final sizing.

18-in. reversible belt conveyor (No. 8) to one of two 18-in. by 62-ft. belt conveyors to a pair of 1,400-ton ground stockpiles as No. 5 or 6 stone. At present No. 6 (1- to ½-in.) stone is being stockpiled while the No. 5 (1½- to ¾-in.) stone from the other screen goes *via* one of two short shuttle belt conveyors—18-in. by 17-ft. conveyor No. 6—to a 20-ton steel truck-loading bin.

Material over the bottom deck of one screen (½-in. to 8-mesh No. 11) is chuted to a bin, and that from the other (¾-in. to 8-mesh No. 9) goes to a third bin or to the same bin *via* 18-in. by 27-in. shuttle belt conveyor No. 7.

Minus 8-mesh material through the bottom decks of both screens—No. 13 or screenings—is discharged direct from one screen, and *via* 18-in. by 28-ft. shuttle belt conveyor No. 8 from the other, to the fourth bin. Trucks haul from these bins to stockpiles. A Michigan front-end loader does all truck loading from stockpiles.

No. 11 and 13 sizes were being used in the asphalt plant on the day this operation was visited. On the previous day No. 5 and 6 sizes were being used. These are the sizes most commonly used, but there is also occasional demand for No. 9. These sizes are hauled by trucks from the bins or stockpiles to stockpiles at the asphalt plant, and rehandling to the feed bin is done by a crane. This is a 100- to 125- t.p.h. McCarter Iron Works hot-mix plant.

The stone plant is controlled from three stations—at the primary crusher, the secondary crusher, and the screening building. Clark controllers are used, and the equipment is interlocked for automatic sequence stopping. In starting up, the final reduction crusher is started first, then the screens, and then the belt conveyors in reverse sequence back to the primary crusher. All electric wiring is underground, and purchased power is reduced to 440-v. for all motors and 110-v. for lights. The primary and secondary crushers are driven by 150-hp. motors, and the tertiary crusher by a 75-hp. motor. Most of the motors used are Reliance.

Gainesville Stone Quarries is a subsidiary of the Robinson Terminal Warehouse Corporation of Alexandria, Va. Other subsidiaries include the Belvoir Sand & Gravel Company, with a sand and gravel plant at Fort Belvoir, Va.; and the Robinson Ready Mixed Concrete Company, with a ready-mix plant in Alexandria. R. L. Cheeseman is president, and J. G. Monteith is plant superintendent.

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THOMAS MCDONALD SR., chief engineer of the Louisville Cement Company, Speed, Ind., has retired after 38 years with the firm.

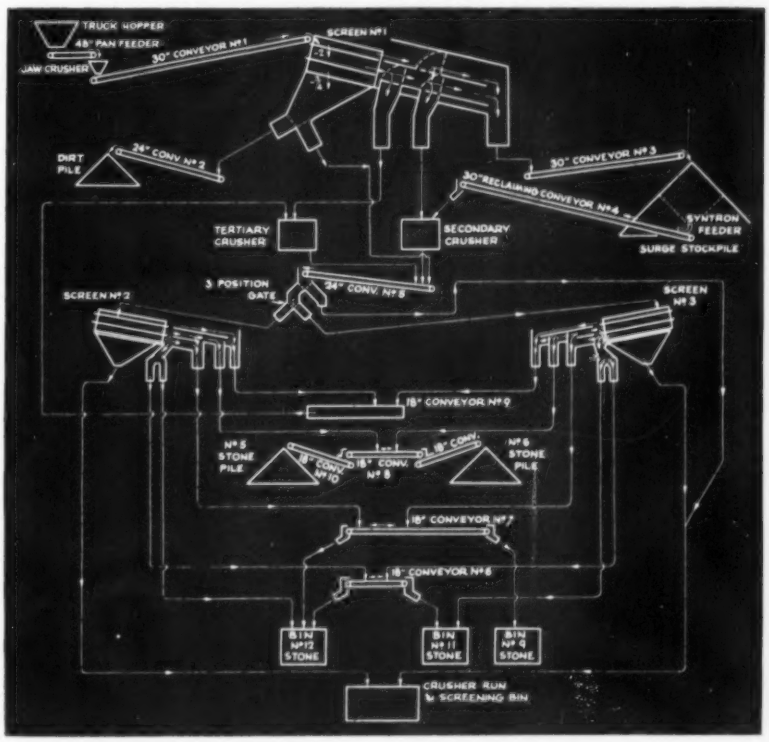
## Cement Production in U.S.S.R. Exceeds Quota by 365,000 Tons

Cement production in Russia exceeded the established quota by 365,000 metric tons during the first five months of 1957, according to an article printed in *Stroitelnaya Gazeta*. The article further stated that almost twice as much production capacity was placed in use during that time, as in the comparable period in 1956.

Total production capacity for the sixth Five-Year Plan was reported at 40,000,000 tons.

The 125-t.p.h. hot-mix plant, which uses a large portion of the crushed stone produced.

Flow sheet of new plant of Gainesville Stone Quarries, showing flexibility of design.



# National Crushed Stone Association Convention Program

## Americana Hotel, Miami Beach, Fla., Jan. 26-30, 1959

MONDAY, JANUARY 26

9:00-6:00—Registration—Caribbean Room

Morning Session

10:00—Meeting of Manufacturers Division Board of Directors—Pan American Room

Afternoon Session

2:30—Meeting of N.C.S.A. Board of Directors—Pan American Room

TUESDAY, JANUARY 27

8:30-5:00—Registration—Caribbean Room

Morning Session

(General)

Grand Ballroom

O. E. Benson, president, N.C.S.A., president, General Crushed Stone Co., Easton, Pa., presiding

9:15—Motion picture

9:45—Greetings from the president—O. E. Benson

10:00—Report of executive director—J. R. Boyd

10:15—Report of engineering director—J. E. Gray

10:30—"Safety Progress in the Crushed Stone Industry"—H. H. Kirwin, chairman, N.C.S.A. Accident Prevention Committee, treasurer, Eastern Rock Products, Inc., Utica, N. Y.

10:45—"First International Skid Prevention Conference"—A. T. Goldbeck, engineering consultant, N.C.S.A., Washington, D. C.

11:15—"New N.C.S.A. Accounting Manual for the Crushed Stone Industry"—Arthur Goff, chairman, N.C.S.A. Cost Accounting Committee, president, Wallace Stone Co., Bay Port, Mich.

11:30—"Startling Implications of Union Political Power"—John F. Lane, Gall, Lane and Howe, Washington, D. C., general counsel N.C.S.A.

12:00—Adjournment

GREETING LUNCHEON

Medallion Room

12:30

Clarence Camp II, president, Camp Concrete Rock Co., Ocala, Fla., presiding

Introduction of new officers and executive committee—O. E. Benson, president, N.C.S.A.

Presentation of N.C.S.A. Safety Contest awards—James Westfield, assistant director, Health and Safety, U. S. Bureau of Mines, Washington, D. C.

Afternoon Session

Session for Finance Officers and Accountants

Pan American Room

Arthur Goff, chairman, N.C.S.A. Cost Accounting Committee, president, Wallace Stone Co., Bay Port, Mich., presiding

2:30—Round table on Application of New N.C.S.A. Accounting Manual—

John J. Fox, partner, Lybrand, Ross Bros. & Montgomery, Certified Public Accountants, Detroit, Mich.

Carl M. English, associate, Gall, Lane and Howe, general counsel, Washington, D. C.

4:30—Adjournment

Cocktail Hour

Grand Ballroom

6:00-7:00

Evening

Open for Individual Plans

WEDNESDAY, JANUARY 28

8:00-5:30—Registration—Caribbean Room

Concurrent Morning Sessions

Session for Operating Men and Equipment Manufacturers

Grand Ballroom

T. W. Jones, vice-president and production manager, New Haven Trap Rock Co., New Haven, Conn., presiding

8:30—"What Has Been Learned from Two Years of Quarry Efficiency Standard Record Keeping"—T. C. Cooke, president, Lynn Sand and Stone Co., Swampscott, Mass.

8:50—Discussion

9:00—Symposium on Ammonium Nitrate Explosives

"Use of Ammonium Nitrate Explosives in Quarry Operations"—Frank J. Shalap, vice-president and general manager, Graham Virginia Quarries, Inc., Occoquan, Va.

"Properties and Characteristics of Ammonium Nitrate as an Explosive"—Dr. Melvin A. Cook, professor of metallurgy and director of explosives research group, University of Utah, Salt Lake City, Utah

10:00—Coffee Break

10:15—Symposium on Ammonium Nitrate Explosives (continued)

"Some Considerations for the Safe Handling of Ammonium Nitrate Explosives"—Dr. Robert W. Van Dolah, chief, Division of Explosive Technology, Region V, Bureau of Mines, Pittsburgh 13, Pa.

10:45—General Discussion

11:15—"Increasing the Capacity of Existing Plants"—W. Julian Parton, assistant to the president, General Crushed Stone Co., Easton, Pa.

11:45—Discussion

12:00—Adjournment

Session for Salesmen

Floridian Room

V. G. Aubry Jr., vice-president in charge of sales, Houdaille Construction Materials, Inc., Houdaille Industries, Inc., Morristown, N. J., presiding

9:00—Opening remarks

9:10—"Technical Service to Sales"—C. T. Johnson, district sales manager, General Crushed Stone Co., Wilkes Barre, Pa.

9:30—Discussion

9:50—"Sales Promotion"—C. F. Heidtman, sales manager, National Lime and Stone Co., Findlay, Ohio

10:10—Discussion

10:30—Coffee Break

10:40—"Co-ordination of Sales with Credit, Price, and Collection Policies"—H. E. Battin Jr., vice-president, Callanan Road Improvement Co., South Bethlehem, N. Y.

11:00—Discussion

11:20—"Co-ordination of Sales and Production"—V. G. Aubry Jr., vice-president in charge of sales, Houdaille Construction Materials Inc., Houdaille Industries, Inc., Morristown, N. J.

11:40—Discussion

12:00—Adjournment

GENERAL LUNCHEON

Medallion Room

12:30

D. L. Williams, president, Virginian Limestone Corp., Ripplemead, Va., presiding

"Humor in Your Business"—Samuel H. Ramsay, humorist, Riverside, R. I.

Afternoon and Evening

Open for Individual Plans

THURSDAY, JANUARY 29

8:30-5:30—Registration—Caribbean Room

Concurrent Morning Sessions

Group Discussions for Operating Men and Equipment Manufacturers

Grand Ballroom

T. W. Jones, vice-president and production manager, New Haven Trap Rock Co., New Haven, Conn., presiding

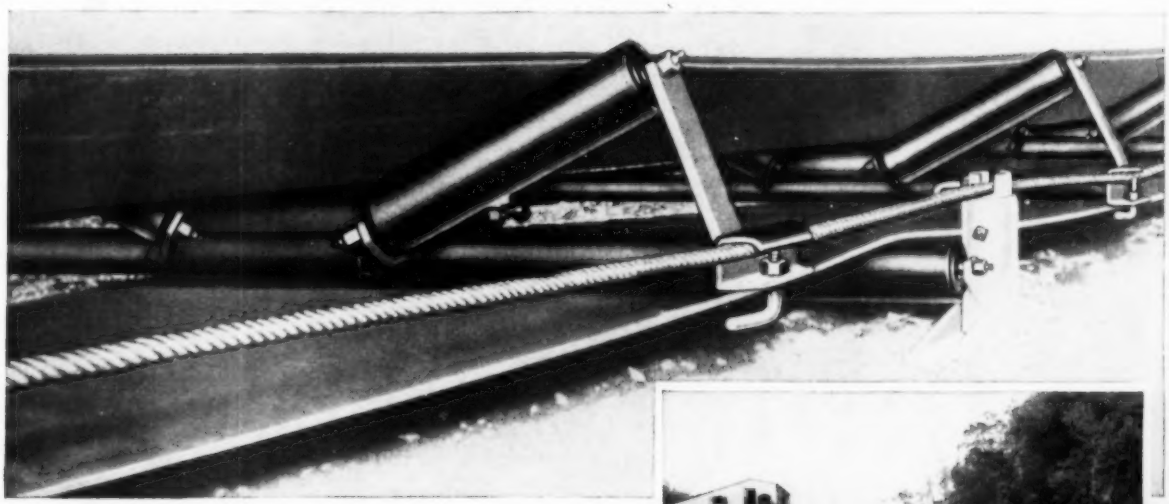
9:00-12:00—Informal Concurrent Group Discussions on Operating Problems

1. Stripping
   Discussion leaders—E. J. Reichert, superintendent of quarries, Harry T. Campbell Sons' Corp., Towson, Md.; and W. H. Seiler, general manager, LeRoy Lime and Crushed Stone Corp., LeRoy, N. Y.
2. Drilling and Blasting
   Discussion leaders—W. C. Ferguson, superintendent of drilling, New York Trap Rock Corp., West Nyack, N. Y.; and Robert Walker, manager, Federal Crushed Stone Corp., Buffalo, N. Y.
3. Loading and Quarry Haulage
   Discussion leaders—R. W. Bowen, general superintendent, Marble Cliff Quarries Co., Columbus, Ohio; and R. H. Chisholm, vice-president, operations, Carbon Limestone Co., Lowellville, Ohio
4. Primary Crushing and Surge Piles
   Discussion leaders—R. D. Brewer, superintendent, New Haven Trap Rock Co., New Haven, Conn.; and D. M. Erskine, engineer, Blue Ridge Stone Corp., Blue Ridge, Va.
5. Secondary Crushing and Recrushing
   Discussion leaders—James Cooke, engineer, Lynn Sand & Stone Co., Swampscott, Mass.; and Hiram Towne, superintendent, Eastern Rock Products Inc., Oriskany Falls, N. Y.
6. Conveying and Screening
   Discussion leaders—Montagu Hankin Jr., vice-president, operations, Houdaille Construction Materials, Inc., Houdaille Industries, Inc., Morristown, N. J.; and C. E. Hogeboom, engineer, Consumers Division, Vulcan Materials Co., Chicago.
7. Washing
   Discussion leader—E. Z. Cole, superintendent, General Crushed Stone Co., Jamesville, N. Y.
8. Stockpiling
   Discussion leader—J. V. Simmons, vice-president, Camp Concrete Rock Co., Ocala, Fla.
9. Stone Sand Production
   Discussion leader—D. O. Duncan, engineer, Virginian Limestone Corp., Ripplemead, Va.
10. Implementing Accident Prevention Practices
    Discussion leaders—H. H. Kirwin, treasurer, Eastern Rock Products, Inc., Utica, N. Y.; and Seymour B. Fleming, safety engineer, New York Trap Rock Corp., West Nyack, N. Y.
11. Underground Operations
    Discussion leaders—W. J. Sparks, vice-president, Central Rock Co., Lexington, Ky.; and W. H. Ruby, chief engineer, Acme Limestone Co., Fort Spring, W. Va.

(*Continued on page* 171)

## An Important New Development...

# The LONG Lo-Rope BELT CONVEYOR



Patents Pending

***Offers*** ***Lower first cost—less maintenance • Easier installation • Self-training • Higher capacity—less spillage!***

In this unique design, the wire rope is located below the carrying belt and carrying idlers and the motion of the belt rocks the idlers in the direction of belt travel to provide automatic self-training. This feature, combined with the belt's deep 27° troughing angle, keeps the load centered at all times, materially reduces spillage, makes possible wider spacing between idlers, and provides high carrying capacity. Adjustable height "Platform Rocker" rope support stands minimize blocking and level belt automatically.

There are other reasons why it will pay you to use the LONG Lo-Rope Conveyor. This unit requires an absolute minimum of maintenance and is designed to give long, dependable service under all conditions. We'll be glad to send complete details without obligation.

*For full information on LONG Lo-Rope Belt Conveyors or a demonstration, write us today*

The LONG Company
Oak Hill, W. Va.



Enter 149 on card, page 165

**WONDERWALL™ WINS!**

# FACT!

## There is no multiwall like

## WONDERWALL™

*(the Toughness Champ . . . made from CLUPAK* paper)*

MULTIWALL BAG DIVISION **WEST VIRGINIA**

# WONDERWALL™ WINS!

# PROOF!

WONDERWALL is the great new development in multiwall bags that makes all ordinary bags old-fashioned. Proof? Here it is! And it's from the field itself—from the roughest, toughest "testing ground" of all! Read what cement and plaster manufacturers are saying about WONDERWALLS.

***"The last seven cars of gypsum cement plaster, shipped in WONDERWALLS (total basis weight 160#), had only 14 broken bags out of 4200. We think this is amazing when compared with our past experience on regular kraft (total basis weight 180#)."***

*"In packing 94# of Portland Cement, we tried 150-pound basis weight* WONDERWALLS *and had excellent results. The bags were filled, with no breakage. They gave us quicker loading. We had no breakage in transit and we noticed great cleanliness of plant and cars."*

***"About packing 70# of mortar cement, we have this to say.* WONDERWALLS *were easier to handle, packed faster, valves closed better than ordinary kraft."***

The proof keeps piling up—WONDERWALLS outperform ordinary multiwall bags. Reason: they're made of remarkably tougher Clupak paper—the paper that stretches . . . the paper that "soaks up" the wallops without failing where ordinary kraft breaks.

WONDERWALLS pack faster, handle easier and stack firmly, too. They add up to greater efficiency and lower costs. And—best of all—they don't cost any more than old-fashioned bags. Let us include a trial shipment of 5,000 WONDERWALLS in your next order.

*™Clupak, Inc.'s trademark for extensible paper manufactured under its authority.*

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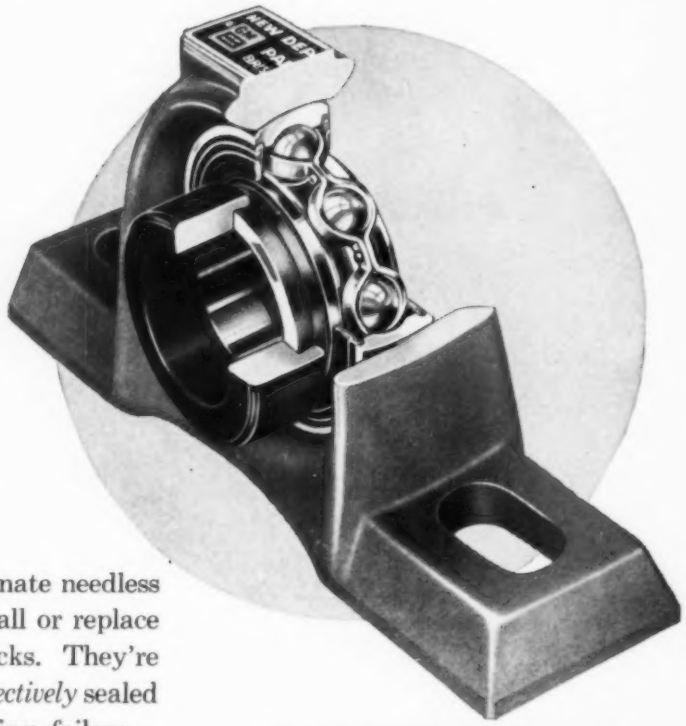
# ND FACTS

## LUBRICATED-FOR-LIFE PILLOW BLOCKS!

**NEW DEPARTURE PILLOW BLOCKS ARE LUBRICATED AT THE FACTORY... AND REMAIN LUBRICATED FOR THE LIFE OF THE BEARING!**



Throw away that grease gun! Eliminate needless lubrication maintenance costs! Install or replace with New Departure Pillow Blocks. They're LUBRICATED-FOR-LIFE and *effectively* sealed to eliminate major causes of bearing failure—over- or under-lubrication and contamination by dust or dirt.

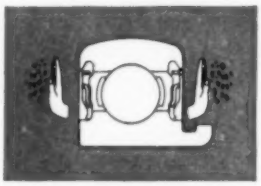
New Departure Pillow Blocks come in 31 shaft sizes—½" through 2 7/16" for a variety of applications. You'll find they can be interchanged with other makes of pillow blocks.

Buy New Departures the next time you require pillow blocks for new equipment or replacement parts. They are LUBRICATED-FOR-LIFE.

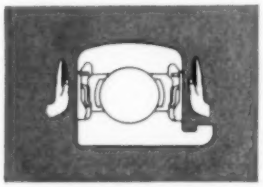
**For complete information write Department O-1.**

***Available for replacement everywhere through United Motors System and its Independent Industrial Bearing Distributors.***

**EACH BEARING HAS TWO SENTRI-SEALS TO . . .**



**KEEP DIRT OUT!**



**LUBRICANT IN!**

**SENTRI-SEAL CONSTRUCTION**

**Designed to provide highly efficient sealing at all times. It is readily removed and reapplied without special tools.**

ND NEW DEPARTURE

DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

*NOTHING ROLLS LIKE A BALL*

# Walkway to efficient dust control

Pangborn Cloth Bag Dust Collector on the job. This is just one of Pangborn's complete line of wet and dry dust collectors.

See those bags? They're the *collect* in the Pangborn Cloth Bag Dust Collector. And they're efficient! The cloth filter has proved the most practical method for collecting finely divided dry dusts. But Pangborn goes a step further. Pangborn engineering has not only adapted this design to increase its collecting effectiveness but has simplified its construction. This means you save money. The Pangborn Cloth Bag Collector offers maximum efficiency, yet is economical to buy, install and operate.

Pangborn engineering is important to every dust-producing plant, regardless of the kind of collector needed. It is not enough to put a dust collector within a plant. An efficient dust collecting system must be *scientifically* planned, designed and constructed to handle effectively a specific dust problem. This thinking is incorporated into every Pangborn proposal.

*The Pangborn Engineer in your area will be glad to go to work for you. He is a dust* expert *and will discuss your individual problem at no obligation. And, for more information, write for Bulletin 922 to:* Pangborn Corp., *5300 Pangborn Blvd., Hagerstown, Md. Manufacturers of Dust Control and Blast Cleaning Equipment.*

**Pangborn CONTROLS DUST**

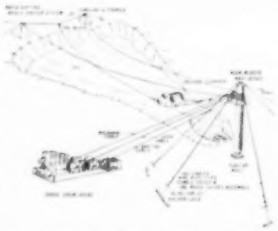
# Increase Sand and Gravel Profits–Dig *and Haul* In One Operation With A SAUERMAN MACHINE

**Digging and hauling are reduced to one continuous operation by using either a Sauerman DragScraper or Slackline Cableway. By combining the two basic steps of material flow, equipment and labor costs are halved—or even more. A single machine, controlled by one man, does the same job as the multiple equipment required by other methods.**

**Profitable handling is further assured by a low maintenance cost of 1½ cents per cu. yd. for an average size installation. Larger machines drop this cost still lower. Important, too, is the money saved on power. You pay only the cost of moving the actual digging tool—the Crescent DragScraper or Slackline bucket. Heavy machines with limited handling-to-dead weight capacity are eliminated.**

## General Handling, Wet or Dry— Pit or Hill Excavation and Reclamation

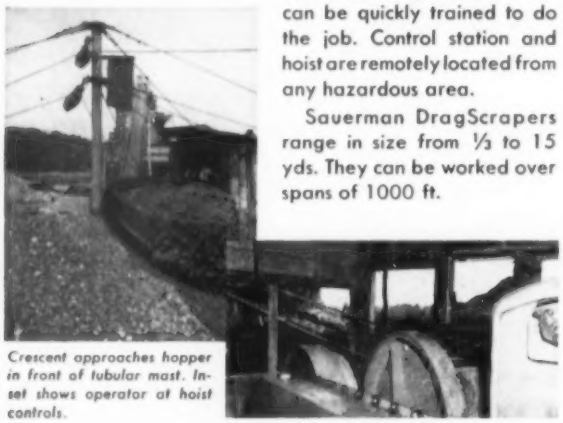
*3-yd. DragScraper digs and hauls sand and gravel from pit to plant hopper over a distance of 400 ft.*



A DragScraper is recommended for these and similar jobs. This machine handles the toughest digging and operates on a hillside or underwater with as much facility as dry level ground. It hauls directly to hopper, crusher or storage pile.

Operation is simple and safe. An inexperienced man can be quickly trained to do the job. Control station and hoist are remotely located from any hazardous area.

Sauerman DragScrapers range in size from ⅓ to 15 yds. They can be worked over spans of 1000 ft.



*Crescent approaches hopper in front of tubular mast. Inset shows operator at hoist controls.*

## Deep Digging, Underwater Recovery— Conveying to High Delivery Point

*This 1½-yd. Slackline Cableway is digging in 70 ft. of water and conveying to stockpile on an average haul of 600 ft.*

When deep digging is required—or anticipated in the future—a Sauerman Slackline Cableway is the best machine. This powerful excavator can dig 100 ft. or more below water, lift its load and deliver to a high pile up to 1000 ft. away. This surge pile can be held in readiness for plant needs.

The bucket inhauls at high speed and dumps automatically. The dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point completing the fast operating cycle.

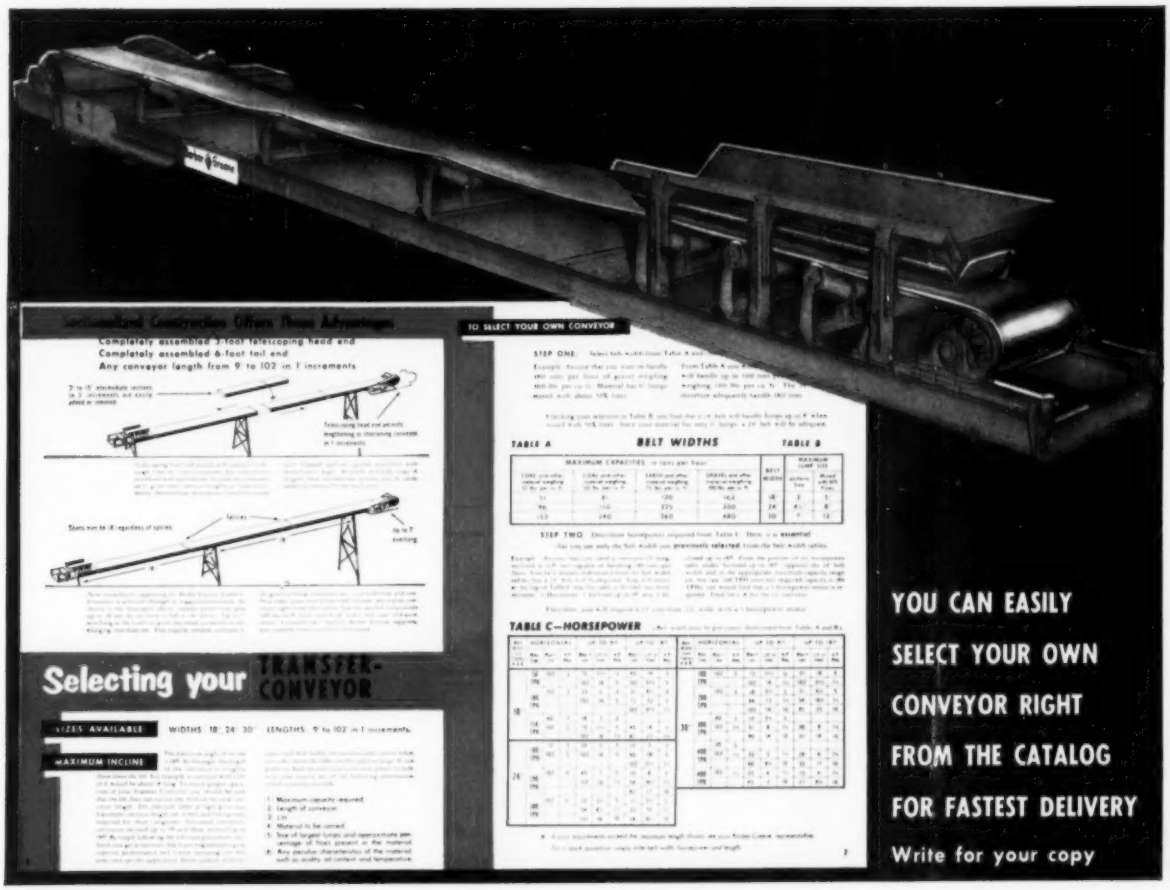
Sauerman Slackline Cableways range in size from ⅓ to 3½ cu. yds. Now available with torque convertor power, the Slackline is increasing its production over 25%.

*Bucket automatically discharges onto a 60-ft. high cone pile. Mast in foreground rises 90 ft.*

**The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of sand and gravel excavating machinery experience. Ask for Catalog A (DragScrapers) and C (Slackline Cableways).**

**SAUERMAN BROS. INC.** 634 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS


Completely assembled 2-foot telescoping head end
Completely assembled 6-foot tail end
Any conveyor length from 9 to 102 in 1' increments
Selecting your TRANSFER-CONVEYOR
SIZES AVAILABLE
WIDTHS 18" 24" 30" LENGTHS 9' to 102' in 1' increments
MAXIMUM INCLINE
TO SELECT YOUR OWN CONVEYOR
TABLE A
BELT WIDTHS
TABLE B
TABLE C—HORSEPOWER
YOU CAN EASILY SELECT YOUR OWN CONVEYOR RIGHT FROM THE CATALOG FOR FASTEST DELIVERY
Write for your copy

# New, low-cost belt conveyor now available in lengths to 102′

If you handle bulk materials, you should have a copy of the new Barber-Greene Transfer-Conveyor Catalog. With it, you can readily select your own conveyor. Belt width and horsepower are automatically correct for your job.

The Barber-Greene Transfer-Conveyor has cut costs on so many jobs that its range has now been extended to 102′ in 1′ increments. Belt widths are 18″, 24″ and 30″.

Because the Transfer-Conveyor is pre-engineered and made up of standardized components, special engineering time and expense are eliminated, and shipment is from stock—usually from the local distributor's stock. Erection is merely a matter of bolting the major components together and positioning the conveyor. Sectionalized construction gives flexibility for lengthening or shortening to meet future requirements.

**Other Transfer-Conveyor advantages include:**

**Rigidly braced channel frame allows 7′ overhang at head end, 18′ spans between supports.**

**Head and tail end sections shipped completely assembled, aligned and adjusted.**

**Heavy-gauge steel decking protects return run of belt.**

**Worm gear reducer, running in oil, cuts maintenance expense.**

**Ball-bearing carriers assure long, trouble-free life.**

**Heavy thread screws provide belt tension adjustment.**

**Parts interchangeable and repair parts readily available.**

58-20-TC

**Barber-Greene** BG

AURORA, ILLINOIS, U.S.A.

# Tuffy® Wire Rope Tips

**Guard Against These Killers!**

**... Get The Full Measure of Service-Life Built In By Wire Rope Specialists**

## Mangled in a Wedge Socket

Here's a result of improper socketing. It was caused by using a poorly designed or worn-out wedge socket. Failure at the dead end can damage other sections of the rope, too.

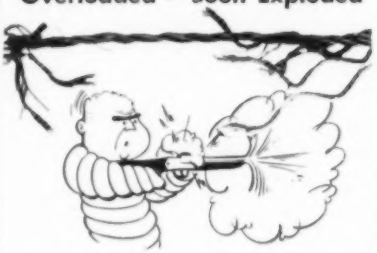
## Rusty Road to Ruin

Rust—No. 1 enemy of steel—takes a heavy toll in wire rope life. An insidious, silent type of killer, rust often does irreparable damage before it's even noticed. The one-strand break shown here resulted when the rope was allowed to become rust-bound through lack of lubrication. Tests show that, with other conditions ideal, properly lubricated rope has up to 10 times the life expectancy of dry rope.

**Tuffy Balanced Scraper Rope**

"Balanced" construction makes it flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Also gives higher resistance to the shock of load impact on slack line. Moves more yardage per foot because it's specially built to take the beating of drum-crushing abuse.

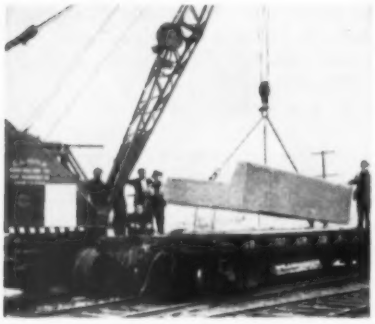
## Overloaded — Soon Exploded



The rated capacity of a wire rope is based on the breaking strength (catalog) divided by a safety factor applicable to the type of service or use. The grade of steel, type of construction and size of the rope determine tensile strength. It must be properly related to the loads it will carry, or costly and dangerous early failures are likely to occur.

## Victim of the Bends

Excessive bending of wire rope accelerates wear. Generally, more flexible ropes are used as bending stresses increase (with decrease in tread diameter of sheave or drum). If a rope is operated on a sheave too small for its bending characteristics, early failure is certain. Through an exhaustive series of bending tests, Union Wire Rope engineers have compiled data that you can use to assure getting the rope construction that will give you the longest service life. Ask about it.



**Tuffy Balanced Slings & Hoist Lines**

"Balanced" because they combine strength, flexibility and toughness in the proper relationship to do a better job longer.

Tuffy Slings and Hoist Lines are a top-performing team in every type of materials handling. The slings are made of a patented, machine-braided fabric that's next to impossible to knot or kink. The hoist lines are a special construction in which strength, flexibility and toughness are balanced.

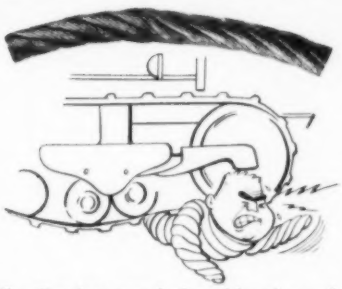
**Tuffy Balanced Dozer Rope**

Built to give you longer service with less downtime. Mounted on your dozer, a 150' reel of ½" or 9/16" can give you a big bonus of extra service. Here's how: when rope shows drum wear or is crushed on the drum, you feed through just enough to replace the damaged part. You save the 40 to 50 feet ordinarily thrown away. Also available in 300' and 500' reels.

**Tuffy Balanced Dragline Rope**

Here's highest abrasive resistance with super flexibility. Better spooling. Smoother riding on grooves. And Tuffy Dragline Rope hugs the drum when casting for full load. Gives you longer service life, consistent dependability, in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.

### Crushed by a Tractor Cleat



The Sunday punch for this piece of wire rope was delivered by a tractor cleat—just one of many crushing injuries caused by rope being run over or banged into by hard, sharp objects. Even the toughest wire rope is no match for this kind of mistreatment.

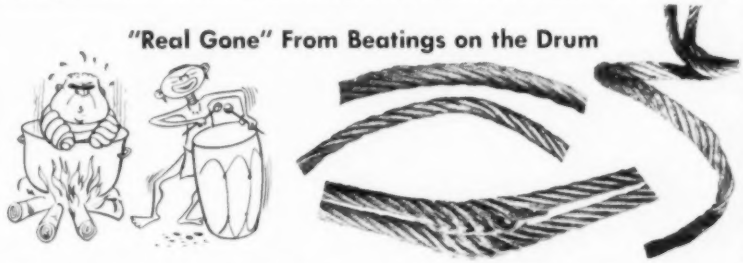
### After a Suicide Jump

This rope jumped out of sheave and was soon destroyed by pulling around the shaft. Actually it was a case of sudden slack which threw the rope out of the sheave.

### Burned on a Frozen Sheave

End of the line came quickly for this rope as the result of operating over a sheave that did not turn. Note the exceptionally heavy abrasion on one side of the rope. Sheaves should be checked thoroughly and often.

### "Real Gone" From Beatings on the Drum



Even under normal operating conditions, drum wear gives wire rope severe punishment. This wear concentrates at the cross-over points and at the flange. Excessive drum crushing results from operating on small drums, excessive loading and poor winding. Smooth drums are not recommended. Here are typical "drum beatings": Cross-over wear; cross-over crushing on drum; drum crushing from poor winding; drum-crushing from small drum.

Although drum wear cannot be eliminated, its effects can be greatly reduced. Under properly engineered procedures, two and three times the service can be obtained from the same line by improving drum conditions. Union Wire Rope Engineers will help you with this problem. Get in touch with us for information.

### On the "Blink" from a Kink

This open kink resulted from mishandling of rope. Guard against kinks by proper winding on the drum. Never pull a loop smaller. Always enlarge it, then straighten out the rope.

### Strangled by a Misfit Sheave

When the bearing surface of a sheave is too small for the rope diameter, pinching action quickly destroys the rope — especially when it's overloaded. The victim shown here was knocked out in just 1½ hours of service.

### Tuffy Wire Ropes are "Job Prescribed"—Each Designed for a Particular Type of Machine

There are thousands of wire rope constructions and Union Wire Rope specialists make them all. But, there is only one Tuffy line of wire ropes. Each Tuffy was developed and proved the one best rope for the particular work for which it is intended. It is designed as a functional part of the type of machine on which it is used.

Tuffy Wire Ropes are "job prescribed" and balanced in each prescription are all the ingredients of strength, flexibility and toughness to give you genuine relief from inefficient operation, foreshortened service life and safety hazards. You get longer service life and you cut down on your rope costs. Union Wire Rope Corporation, 2132 Manchester Avenue, Kansas City 26, Missouri.

***Your Tuffy Distributor Can Help You Get The Full Measure of Service Life***

C1

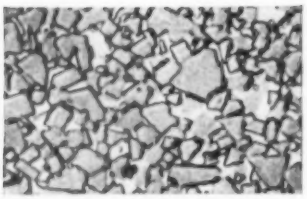
**UNION** Wire Rope

ARMCO

*Subsidiary of* ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Southwest Steel Products

# Longer bit life— with *new* Sandvik Coromant Bits



**Sandvik Coromant Tungsten Carbide** (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities —therefore stronger, longer-lived.

**Low quality Tungsten Carbide** (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give more footage per bit, lower drilling costs. Here's why:

**1** Only first-quality tungsten carbide is used —as shown in the microphotos above. This means less wear, longer life and a better job.

**2** The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

**3** The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels — the most widely used in the world — and Sandvik Coromant extension steel equipment.

## Sandvik Coromant Detachable Bits are Available in the following Thread Sizes and Bit Diameters

Available Diameters, in Inches

| Type | Thread | 1 1/2 | 1 5/8 | 1 3/4 | 1 7/8 | 1 11/16 | 2 | 2 1/8 | 2 1/4 | 2 5/16 | 2 1/2 | 2 3/4 | 3 | 3 1/2 | 4 | 4 1/2 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHOULDER | TAPER | x | x | x | x | | | | | | | | | | | | |
| | F | | x | x | | | | | | | | | | | | | |
| | 113 | | x | | | | | | | | | | | | | | |
| | H | | | x | x | x | x | x | | x | | | | | | | |
| | 115 | | | x | x | | | | | | | | | | | | |
| | D | | | | | | x | x | x | x | x | x | x | | | | |
| | K | | | | | | | | | | | | x | x | x | x | |
| BOTTOMING | 1" Rope | | | | x | x | x | x | | x | | | | | | | |
| | 1¼" Rope | | | | | | x | x | x | x | | x | | x | | | |
| | 400 | | | | | | x | x | | x | | x | | | | | |
| | 1½" Rope | | | | | | | | | | | x | x | x | x | x | |
| | 600 | | | | | | | | | | | x | x | x | x | | |
| | 700 | | | | | | | | | | | | | x | x | | |
| | J7.5 | | | | | | | | | | | | | | | x | x |
| | 2" Rope | | | | | | | | | | | | | | x | x | x | x |
| | 1000 | | | | | | | | | | | | | | | x | | |

*Write or phone today for further details to either of the addresses below:*

*610 Industrial Avenue*
*Paramus, New Jersey*
*COlfax 1-6800*

**Atlas Copco**

*930 Brittan Avenue*
*San Carlos, California*
*LYtell 1-0375*

# Knuckles right down to any job!

This rugged heavyweight asks no quarter, it just wades right in and polishes off tough hauling jobs. Two high-capacity "live" rear axles give it better flotation and traction on soft ground. And its 234-hp. engine, with dual carburetors standard, gives this T900 tractor the big-chested power to handle the big hauling jobs without tiring.

The new Dodge tandems are packed with features that make heavy-duty hauling easier and more profitable: New instrument clusters, with tachometer and graduated ammeter and oil pressure gauges standard . . . suspended brake and clutch pedals . . . 90-degree-opening hood for easy servicing . . . air brakes standard on T900 models . . . up to 20 speeds forward. But see your Dodge dealer—and get the *heavy-duty* reasons why . . .

today,
it's real smart
to choose **Dodge Trucks**

Built throughout for dependable heavy-duty service, this 354-cubic-inch V-8 has dome-shaped combustion chambers . . . double rocker-arm shafts . . . precision timing gears instead of chains . . . positive exhaust-valve rotators . . . hydraulic tappets . . . sodium-cooled exhaust valves. And it develops full power on thrifty *regular* gas!

# engine power
BY CATERPILLAR

**Sand, gravel and rock companies:**

## Cut your equipment for both mechanical

**Allen Ready Mix and Roverud Construction**

PROBLEM:

Mechanical and electric power both are needed for a dredge

SOLUTION:

Put both ends of a single Cat Diesel to work

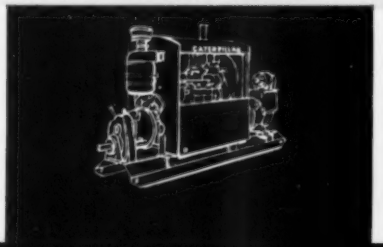
PROBLEM:

Excessive investment in engines

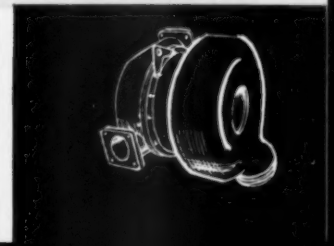
SOLUTION:

Use Cat two-handed Diesels

**Nine basic Cat two-handed Engines range in size from the 650 HP (maximum output rating) D397 to the 75 HP D311 (Series H). These can be matched with generators to meet your exact job requirements.**




**Turbocharging is standard on most Cat Engines, giving more power per engine weight to make possible a much smaller engine package for a given horsepower requirement.**



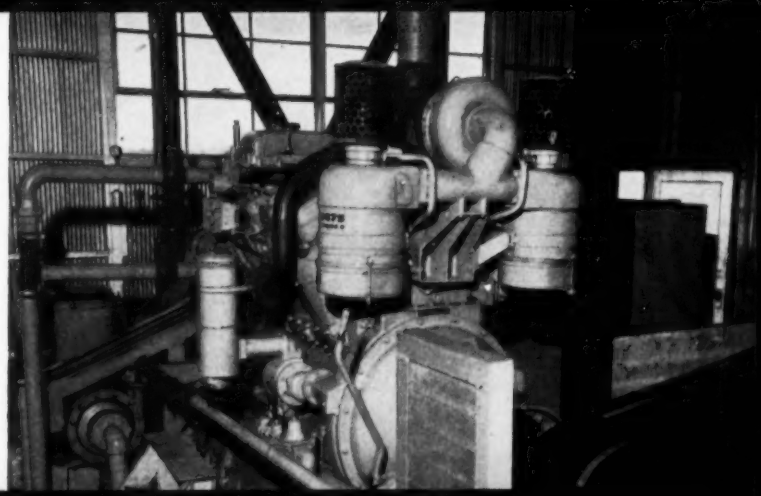
# needs with one Cat Diesel and electric power

**save money with Cat two-handed Diesels**

**Engine Division, Caterpillar Tractor Co.**
**Peoria, Illinois, U. S. A.**
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

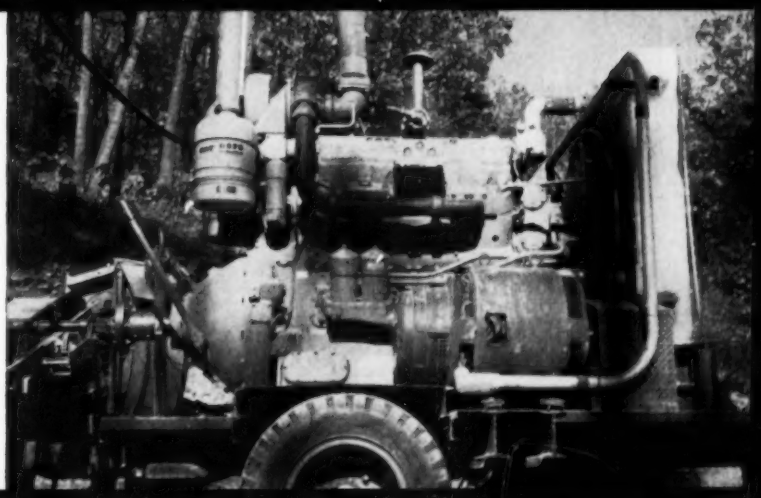
Bill and Sid Allen, owners of rapidly expanding Allen Ready Mix (left), faced the problem of replacing an old dredge that was giving erratic production of 90 t.p.h. A Caterpillar Dealer Engine Specialist was contacted. Knowing the Allen engine had to power a Thomas NHL pump, a 2″ centrifugal priming pump and a 45 KW generator to handle the single drum hoist, and other electrical requirements, the CDES recommended a Cat D375 Turbocharged Engine, to furnish both mechanical and electric power.

This D375 (right), like all Cat Engines, has the bearing, block and crankshaft strength to take power off either end. The Allen Ready Mix D375 has shown after 1,100 hours that it's capable of handling the job of two "all-round" diesels of light-duty design. The V-belt drive transfers power from flywheel end; and a front-end shaft and V-belt drives the 2″ priming pump and generator. Now this Memphis dredge produces 175 t.p.h.



One aggregate plant of Roverud Construction Co. was using four engines. Maintenance, portability, loss of production were problems. Partner Karl Hoegh (left) contacted his Caterpillar Dealer Engine Specialist. Solution: New Cat two-handed Diesels—a D397 at the Spring Grove, Minn., plant—a D375 at the Dakota, Minn., plant.

At left, the van-mounted D397 Turbocharged Engine direct-drives a Cedarapids 40″ hammermill. And off the front of the engine a generator powers a 100 HP electric motor on the jaw crusher as well as motors on screens and conveyors. At right, the Turbocharged D375 is being set up for another combination drive application at the Roverud plant near Dakota, Minn.

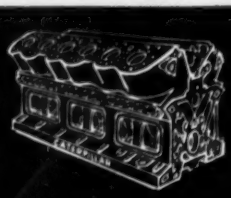


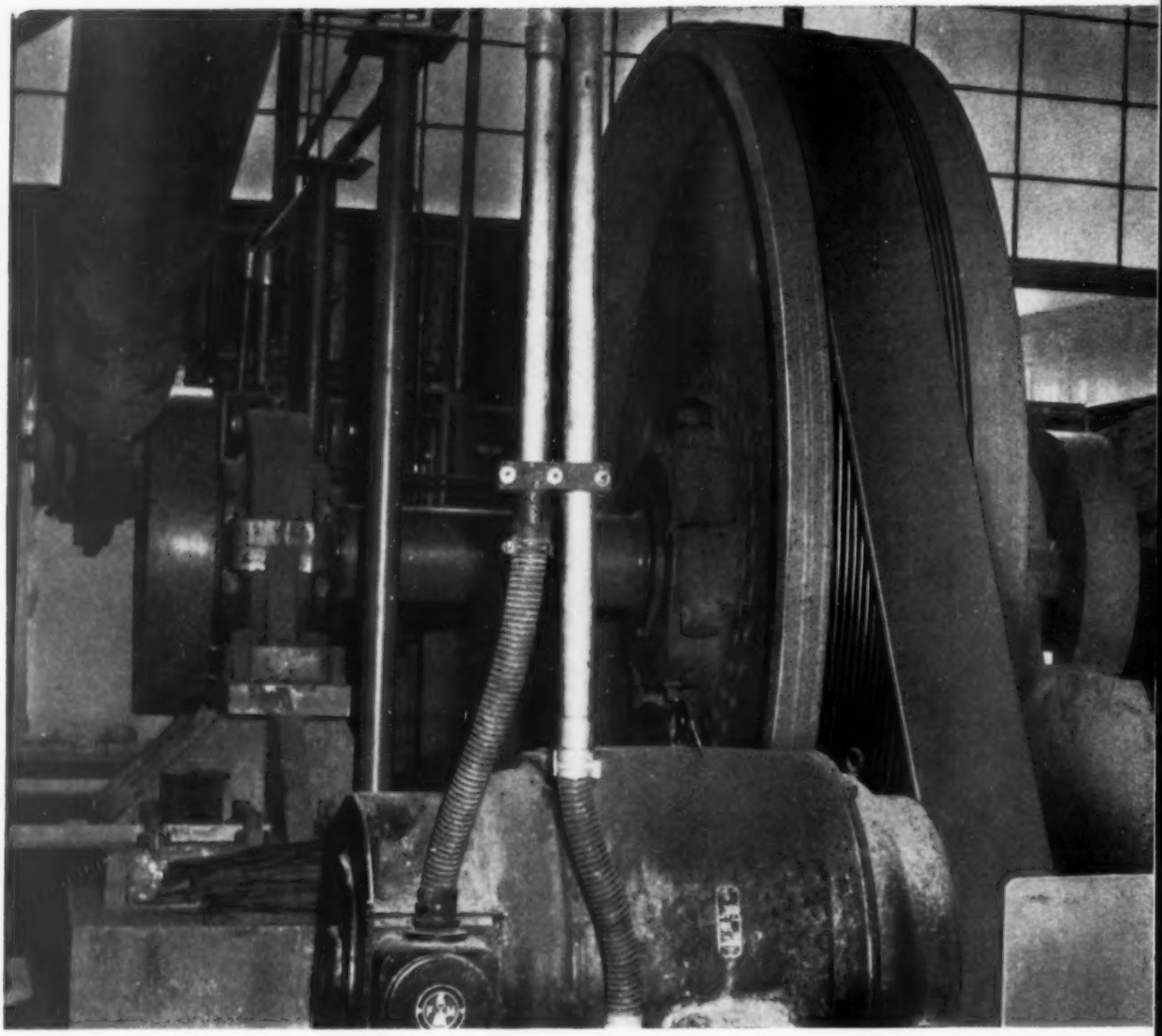
Your Caterpillar Dealer Engine Specialist is your diesel power consultant. He's backed by quality parts reasonably priced, and a skilled staff of factory-trained servicemen. Call him now to avoid problems later.

Cat Generators have outstanding heavy motor starting ability, are simple and compact with no moving parts in the voltage control system. Output terminals are conveniently located for connection to panel or load. Generators are matched to engines.

Caterpillar's own foundry casts engine blocks of a special high-tensile-strength alloy, 50% stronger than ordinary gray iron castings. Further rigidity and strength are provided by numerous ribs and partitions.

CDES





# R/M POLY-V® DRIVE . . . MORE POWER—LESS SPACE

## . . . "More Use ~~per~~ for Your Dollar"

Patented new design makes the difference! A single, endless, parallel V-ribbed belt runs on sheaves specially designed to mate precisely with belt ribs . . . permits *narrower* sheaves to deliver *equal* power in as little as ⅔ the space of a conventional V-belt drive — or up to 50% *more* power in the *same* space! There's *less shaft overhang . . . less drive weight . . .* "*More* Use per Dollar" with R/M Poly-V* Drive.

Just *two* Poly-V belt cross sections meet *every* requirement for heavy duty power transmission.

**OTHER ADVANTAGES**

- **Eliminates Multiple V-Belt "Matching" Problems**
- **Reduces Wear on Belt *and* Sheaves**
- **Maintains *Constant* Speed Ratios, *No* Load to *Full* Load**
- **Cooler, Smoother Running**
- **Reduces Belt and Sheave Inventories to a *Minimum***

Write for Bulletin #6638 . . . or discuss the advantages of new R/M Poly-V Drives for *your* applications with an R/M representative.

*Poly-V is a Registered Raybestos-Manhattan Trademark

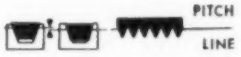
**HOMOFLEX HOSE** — Rugged, easy handling flexible construction for use with air, water, other fluids and gases. Mandrel-made . . . uniform diameter, no pre-set twist. Coils and uncoils *freely* in *any* direction. Takes high pressures and surges with wide margin of safety. Homoflex Hose does a *better* job . . . and *lasts longer*. Write for Bulletin #6879.

**RAY-MAN CONVEYOR BELT** — Engineered for long life on tough hauls. It is tough, flexible, resists gouging and tearing. Has high fastener holding ability . . . requires no breaker strip. Other R/M belt types available for all bulk materials handling conditions. Write for Catalog 25CB. Below: World's longest one-piece conveyor belt leaves R/M plant for large mine installation.

RMB04

**R/M POLY-V® DRIVE**

**50% LESS OVERHANG**
**For less drive weight, less space**




**UNVARYING PITCH DIAMETER**
**Poly-V cannot sink into grooves under shock load**

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**MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY**

# RAYBESTOS-MANHATTAN, INC.

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls

# I'm Convinced **M-F** has the **Right Approach** to POWERFUL, VERSATILE EQUIPMENT

Speed, versatility, stamina, efficiency, and economy is the approach Massey-Ferguson takes to industrial equipment.

That's what you find in this mighty, customer-proven Work Bull 303 rig. It will keep your job moving and send your profits soaring.

• It is faster cycling than more expensive, single-purpose machines because it backs up or goes forward at the touch of a pedal – no shifting or clutching. Same pedal controls acceleration. Full-time power steering, individual turning brakes, 54.9-h. p. engine with special torque converter are other features of this amazing tractor.

The 7/8-cubic-yard loader obtains maximum efficiency with direct-line thrust, but without sacrifice to dump height because of telescoping lift arms.

The famous Davis Backhoe makes it an all-around rig. Numerous other attachments let one man handle scores of different jobs with one machine.

You will like other cost-saving Massey-Ferguson Industrial Equipment, too. Your M-F Industrial Dealer can help you select the outfit that's right for you. Write for free literature and his name and address.

Work Bull 1001 Work Bull 303 with 500 Loader and Davis Backhoe Work Bull 202 with Davis Loader and Backhoe Work Bull Fork Lift

**MASSEY-FERGUSON INDUSTRIAL DIVISION**

1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

# More Information, Please

**Use postcard to obtain literature or details about equipment and products reported in this issue.**

**A DUST COLLECTOR APPLICATION HANDBOOK** offered by the *Wheelabrator Corporation* describes a wide range of industrial dust and fume producing processes that can be successfully controlled with the properly designed cloth or glass bag-type dust collectors. Operating principles of Dustube collectors are illustrated and explained. **(301)**

**THE ROLE OF MOLYBDENUM IN STEEL CASTINGS** is discussed in a 36-page booklet available from the *Climax Molybdenum Company*. Illustrated with tables, charts, and graphs, the text discusses hardenability, tensile properties, fatigue, hardness, wear and impact resistance, machinability, and weldability of cast steels. A special section is devoted to the role of heat-treated low alloy steel castings used in earthmoving equipment. **(302)**

**A NEW HORIZONTAL-GRATE COOLER,** designed to cool materials ranging in size from sand to clinkers and pellets, is described in Bulletin CO-6, published by the *Fuller Company*. A schematic diagram of the cooler and photographs showing details of a typical installation illustrate the bulletin. **(303)**

**HIGHER BULK DENSITY AND LOWER POROSITY** are features of Walsh high alumina refractories featured in a new bulletin released by the *Walsh Refractories Corporation*. Characteristics and properties are detailed and typical uses are featured. Included is technical data and a complete list of standard 6 in. and 9 in. liners. **(304)**

**AUTOMATIC REPRESENTATIVE SAMPLING** of liquids, slurries, and solids with the Geary-Jennings sampler is described in a bulletin from *The Gallagher Company*. Construction features, application photos, and diagrams supplement the descriptive data on the different types of samplers available. **(305)**

**THE TRANSALL BELT PULLER** is covered in literature published by *Transall, Incorporated*. Model BP30 for 30 in. belts or smaller and Model BP42 for 42 in. belts or smaller are diagrammed and their features are listed. **(306)**

**SPICER BULLETIN NO. 606,** covering the 12-speed Model 8125 Synchro-Master transmission for heavy-duty trucks is available from the *Autocar Division, White Motor Company*. Specifications and a typical performance chart are included. **(307)**

**GEARLESS GYRATORY REDUCTION CRUSHERS** in sizes from 9½ in. to 85½ in., a range in horsepower from 2 to 250, with capacities from 1 to 950 t.p.h. are described in Bulletin 58-D from the *Kennedy Van Saun Manufacturing & Engineering Corporation*. Details of drive method, cavity design, tramp iron protection, and the Kennedy self-aligning eccentric bearing are detailed. **(308)**

**MODEL S-M LOW PRESSURE, AIR-ATOMIZING BURNER,** designed for operation with Standard's Superlift asphalt plant dryers, is described in a booklet from the *Standard Steel Corporation*. The Model S-M burns heavy fuel oil, gas, or both and is furnished completely assembled on a common base. **(309)**

**A CATALOG OF POWER LUBRICATION SYSTEMS** just released by the *Lincoln Engineering Company* covers a complete line of lubricant application equipment, fittings, and accessories. Included are descriptions of completely automatic centralized systems, semi-automatic, and manual methods of lubricating machines. **(310)**

**K-MODEL SHOVEL CRANES** are detailed in two 20-page catalogs issued by the *Link-Belt Speeder Corporation*. Both

**January** ***PIT AND QUARRY*** **1959**

**Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.**

**VOID AFTER 60 DAYS**

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We Produce_____

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**431 South Dearborn Street**
**CHICAGO 5, ILL., U.S.A.**

# More Information, Please

**Use postcard to obtain literature or details about equipment and products reported in this issue.**

the 1¾-cu. yd. K-370 and the 3-cu. yd. K-608 series are covered by photographs and descriptive copy, emphasizing features such as power hydraulic controls, power steering, and easy job-to-job transportability. **(311)**

**DRYERS** manufactured by the *Denver Equipment Company* are detailed in Bulletin No. D4-B3. In addition to an explanation of construction features, the bulletin contains a table of typical drying data and diagrams of various types of dryers. **(312)**

**ELECTRIC PRECIPITATORS** are discussed in Bulletin No. 104, prepared by the *Buell Engineering Company*. A three-dimensional scale drawing shows the major working parts of the Type W precipitator. Operating principles of a basic electric precipitator are discussed. **(313)**

**THE LOADMASTER,** a device for loading explosives in bore holes in quarries and strip mines, is featured in literature from *The King Powder Company*. The Loadmaster lowers cartridges into the bore hole under continuous speed control, and then automatically and speedily withdraws the line to the surface. **(314)**

**"SAFE-GUARD" SLINGS** have been completely catalogued by the *Macwhyte Wire Rope Company*. Specifications, load ratings, and standard fittings for sizes ¼-in. in diameter to 1½-in. in diameter are contained in Bulletin No. 5886. **(315)**

**CUSTOM ENGINEERED BELT CONVEYORS** are described in a booklet published by the *Western Machinery Company*. The literature contains engineering data on how to estimate conveyor requirements, including capacity charts, recommended belt speeds, horsepower requirements, maximum angles of inclination, and required conveyor lengths. **(316)**

**SORBTEX,** a shock damping and vibration-isolation pad material for heavy machinery such as grinding mills, ball mills, generators, etc., is discussed in a brochure issued by *Voss Belting & Specialty Company*. The manufacturer reports that Sorbtex withstands loads up to 20,000 p.s.i. **(317)**

**INTEGRAL-SHAFT SHEAVE BULLETIN** released by the *Allis-Chalmers-Manufacturing Company* gives construction and operating features of Vari-Pitch integral shaft sheaves for low-cost stepless speed control in large machine drives. **(318)**

**INFRA-RED HEATING EQUIPMENT** for thawing frozen bulk material in railroad cars is the topic of a publication from *Hewitt-Robins, Inc.* The booklet presents a technical description of infra-red heat rays and explains how they can be harnessed to speed up the unloading of materials in freezing weather. **(319)**

**ACCURAY CONTINUOUS FLOW DENSITY SYSTEMS** for the measurement of density, specific gravity, percent solids, concentration, or related quantity are detailed in literature from *Industrial Nucleonics Corporation*. The system will make these measurements in liquids, slurries, or divident solids from the exterior of the pipe without contacting the measured material. **(320)**

**ATLAS COPCO STATIONARY AIR COMPRESSORS** are featured in a leaflet which provides complete operating data on models in the AR compressor series, delivering from 330 to 3,220 c.f.m. at 100 p.s.i. **(321)**

**UNCO CABLE CONTROLLER** for Caterpillar DW20 and DW21 scrapers is featured in a booklet prepared by *The U. N. Company, Inc.* Entirely mechanical in operation, the Unco cable controller eliminates the causes of cable breakage. **(322)**

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### PLASTIC WIRE COUNTERED PRIMACORD

A strong, tough Primacord, armored with wire and covered with a plastic material. Recommended for use in deep, ragged holes or with metal or fibre explosives containers, where strength and resistance to abrasion and cutting are essential. Tensile strength 300 lbs. 1000-ft. spool 32 lbs.

### PLASTIC REINFORCED PRIMACORD

Covered with tough plastic material, not affected by high Summer heat or Winter cold. Waterproof — resistant to acids commonly encountered. Use for extremely deep holes, river crossings, field shots that must stand for long periods of time and in other wet conditions. Tensile strength 275 lbs. 1000-ft. spool 22 lbs.

### REINFORCED PRIMACORD

Textile reinforced, tough, resilient, flexible. Recommended for surface trunk lines and deep holes where normal strength and resistance to abrasion and cutting are needed. Tensile strength 160 lbs. 1000-ft. spool 19 lbs.

### PLAIN PRIMACORD

Textile-covered, flexible and resilient. Suitable for surface trunk lines and shallow holes where tensile strength and resistance to abrasion and cutting are not required. Tensile strength 125 lbs. 1000-ft. spool 18 lbs.

### DETACORD

Smaller (and less powerful) than Primacord. Core of PETN is textile-reinforced and wax finished. Identified by light brown surface with cross windings of red yarn forming an "X" pattern. Resilient, flexible. An economical detonating fuse for use in secondary blasting, long hole underground blasting and pipe-line ditching. Not recommended for primary blasting. Tensile strength 100 lbs. 500-ft. spool weighs 8 lbs.; 1000-ft. spool weighs 16 lbs.

### QUARRYCORD

Used to connect and ignite safety fuse in secondary blasting. Burns progressively with an external flame at the zone of burning — about one foot per second. Flexible — not affected by stray currents. 500-ft. spools, 1000 feet to the carton. Fuse Connectors — 100 in a box.

### IGNITACORD

Used for connecting and igniting safety fuse in rounds. Burns progressively with a short hot external flame at the zone of burning. Type A, 8 to 10; Type B, 16 to 20 seconds per foot. 100-ft. spools. Fuse Connectors — 100 in a box.

**Detonating Fuse:** It functions as the detonating agent throughout the entire blast. It operates as the priming agent in each load, and serves to connect all loads in planned sequence of detonating. It consists of a core of PETN enclosed in various textile or plastic coverings. It cannot be set off by normal vibration or friction, ordinary impact or sparks, but must be detonated with fuse and cap or electric blasting cap. Of particular importance is the fact that it is not affected by stray electrical currents — and a direct hit by lightning failed to detonate Primacord.

**Ignitacord and Quarrycord:** These products function as Safety Fuse igniters, to be used only as described.

**With PRIMACORD® • DETACORD® QUARRYCORD® • IGNITACORD®**

### *Detonating Fuse Recommendations*

| *CONDITIONS* | *PRIMACORD* | | | | *DETACORD* |
|---|---|---|---|---|---|
| | *Plain* | *Reinforced* | *Plastic Wire Countered* | *Plastic Reinforced* | |
| Jackhammer holes | X | | | | |
| Shallow well-drill holes | X | | | | |
| Secondary blasting | X | | | | • |
| Deep, ragged holes | | X | X | X | |
| Extra deep holes | | | X | X | |
| Deep, wet holes | | | X | X | |
| When a field shot must stand a long time | | | X | X | |
| River crossings | | | X | X | |
| Loading with heavily reinforced explosives containers | | | X | | |

•DETACORD is also suitable for use in Pipeline Ditching and Underground Long-hole Blasting.

For your Trunk Line, Plain Primacord serves in most cases. You can use Reinforced Primacord to advantage, especially where the going is rough.

*For more information see your Explosives Supplier, or write to*

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**Simsbury, Connecticut • Since 1836**

*Primacord® and Detacord® Detonating Fuse • Quarrycord® • Ignitacord® Safety Fuse • Pyrotechnical Devices and Blasting Accessories*

1958 has been a year of healthy consolidation. The generally lower level of new business we have had in common with most capital goods companies has given us a much needed opportunity to examine all our operations with the emphasis on sharpening efficiencies and stepping up the rate of our technological advance. In both, we have made substantial gains.

The sharpening of efficiencies is evidenced by a number of changes. Our manufacturing costs and delivery times are both noticeably better. A reorganization of our Research & Development group has resulted in a greater emphasis on basic research and a speeding up of development of new processes and equipment. This will ultimately include more and better manpower in both these areas. We have simplified routines, eliminated many nonessential operations and projects which seem to creep in during boom times. This allows us to proceed with less staff, but a more able and experienced one.

The current lag in new business has been much less noticeable overseas, and we have been concerned with a number of very large and significant projects abroad. Our subsidiaries have continued to progress and are contributing substantially to the financial balance of our consolidated effort.

**PULP AND PAPER** — A Canadian pulp producer will install a complete D-O Bleach Plant, and Bleach Washers will be utilized in expansion of an Indian groundwood mill. Late in the year Brownstock Washing and Recausticizing Systems, Deckers and hypochlorite preparation equipment were ordered for a new French mill. At a second French mill, a large Brownstock Washing System was put into operation in 1958.

Recausticizing Systems will be installed at two other new mills, one producing paper in India and the other linerboard in the western United States. Continued evidence of widespread acceptance of the American Disc Filter has been demonstrated by the number of orders entered for this efficient saveall. Also of interest were filters ordered for local manufacture from our Australian subsidiary and our Japanese representative.

**FOOD PRODUCTS** — In the citrus industry, Merco Centrifuges and Mercone Screening Centrifuges have been applied to the finish-processing of orange juice prior to concentration. Successful also has been application of the Centrifuge-Precoat Filter combination to apple juice processing.

Corn starch washing systems consisting of various combinations of centrifugal equipment were ordered for mills in the United States, Colombia, Holland and Mexico. And, as in so many previous years, the sale of RapiDorr Clarifiers and O-C Filters for cane sugar processing has contributed heavily to orders entered.

**FLUOSOLIDS SYSTEMS** — Applications of the FluoSolids system were broadened in 1958 to include heat treatment or drying of such materials as foundry sand, phosphate base food products and concentrated detergent and for carbon reactivation. Another new application will be partial roasting of sulfide concentrates at one of Canada's largest smelters.

Other FluoSolids projects now in the design stage or under construction are slag dryers for India and Alabama; pyrite roasters for Spain, South Africa and California; a coal dryer for a midwestern producer and two-stage arseno-pyrite roasters for installation in the gold fields of northern Canada. Now in operation or under construction around the free world are over 100 FluoSolids installations on such proven applications as sulfide ore roasting, coal and slag drying, and limestone and phosphate rock calcination.

**COAL** — Fine coal recovery and water clarification will be accomplished at Eastern and Australian cleaning plants in large Thickeners ordered within the past year. In a number of instances, an American Filter and ODS Pump will complete the fines recovery circuit.

**IRON AND STEEL** — Proof of the versatility of the DSM Screen is its application at three points in the heavy media cyclone flowsheet. In its first use on the Iron Range it has considerably reduced magnetite losses. In this general field also, the Thickener-Filter combination has continued to be widely applied to recovery of blast furnace flue dust.

**CHEMICAL** — In 1958 new developments highlighted Dorr-Oliver activity in the far-flung chemical industry. Among the foremost of these was the plastic Filter, a rotary drum vacuum unit constructed of plastic with glass fiber reinforcing. Initial orders indicate the applicability and economy of this unit for mildly corrosive applications.

A second major development, the Merco H-30 Centrifuge, provides the chemical industry with a high capacity, high speed unit capable of clarifying up to 600 gallons of slurry per minute. The product of nearly four years of testing, this machine has substantially reduced operating power requirements per gallon of feed. One of the first commercial applications will be crystal separation at 90° below zero.

Result of yet another new design program is the expanded line of Type L centrifugal pumps. Here, three new designs provide increased capacity and head range and reverse inlet flow for operating speeds of both 1750 and 3500 rpm. In addition, Hypalon elastomer lining is now standard for both Olivite and ODS Pumps.

During the year a German manufacturer ordered the eighth and ninth Horizontal Filters for dewatering artificial resins, and domestic producers purchased Horizontals for such applications as washing ammonium sulfate and nitrocellulose and filtering potash and copperas. Also in the potash field was use of the DSM Screen for debrining crystallizer underflow.

**GENERAL METALLURGICAL** — Development of an air-lift agitation system for the American Filter has provided a third method of maintaining heavy solids in suspension prior to filtration. Complementing the conventional paddle and swing agitators, this new method has been extensively tested at operating installations.

U. S. and Chilean producers have ordered giant Thickeners with the strongest turntables ever fabricated, and a copper mill in the Belgian Congo will utilize ten large vacuum Filters in a current expansion. New construction at U. S. cement plants includes the three largest Slurry Mixers ever furnished, each 120 feet in diameter, as well as a variety of smaller machines.

**WATER** — Here also new construction and plant expansions resulted in application of a variety of D-O pre-treatment equipment. Two large Hydro-Treator mechanisms will supplement four additional units already in operation at Miami, Florida, and Topeka, Kansas will utilize Presedimentation Clarifiers and Flocculators. PeriFilter systems will be installed at Peoria, Illinois and Leander, Texas, and in Mexico City the first PeriFilter of a new, simplified control design is now going into operation.

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**Not the least of our gains in efficiency has resulted from new and vastly improved headquarters facilities both here and abroad. Our new International Headquarters was completed here in Stamford in July, the staff of D-O NV expects to move into its own new office building in Amsterdam shortly, and our associates in both Brussels and Paris are enjoying new and excellent facilities in co-operatively owned buildings.**

**In every respect, we are better prepared than ever before to take advantage of the upswing to come and to give better service to our customers throughout the world. This betterment, of course, could only have come about by the diligent and co-operative efforts of our total staff, and to them belongs the credit for the work done.**

J. D. Hitch, Jr.
*President*

***November 5, 1958***

D-O, American, Merco, RapiDorr, FluoSolids, Densludge, DSM, Olivite, and PeriFilter—Reg. T.M. U.S. Pat. Off. Mercone, CompleTreator and ODS are trademarks of Dorr-Oliver • Hypalon—Reg. T.M. E. I. du Pont de Nemours & Co.

**2 to 3 times**
**Greater Thrust Capacity**

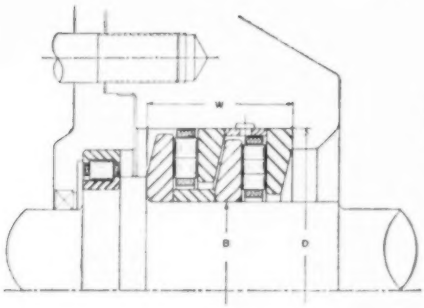
**8 to 12 times**
**Longer Life Expectancy**

# *New* ROLLWAY
# TANDEM THRUST BEARING

Using axial space along the shaft, rather than enlarging the housing diameter, this new Rollway tandem thrust bearing distributes the load over two or three stages of roller components. Gives 2 to 3 times more thrust capacity than conventional thrust bearings. Life expectancy is 8 to 12 times longer depending upon the number of stages.

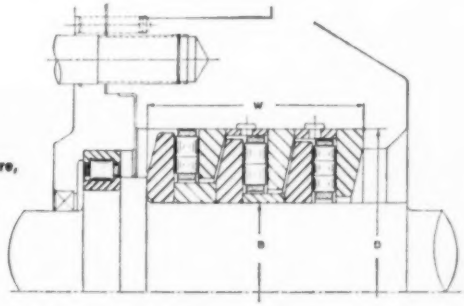
Each stage comprises a rotatable bearing plate . . . a bronze retainer with thru-hardened steel rollers . . . a compression sleeve . . . and a stationary bearing plate. The thrust load is applied to the first stage and is by-passed by each compression sleeve in turn to the remaining stage or stages.

Calculated deformation of the bearing plates distributes the load uniformly on all rollers. A greater number of rollers in the first stage carries about 60% of the load, without increasing the load per roller. Compression sleeves have cross-sectional areas proportional to the load imposed. Roller variance is held within one ten-thousandth inch.




✓ **TWO STAGE TANDEM**

**22 sizes, up to 17" bore, 34" O.D., and 2,325,000 lb. capacity at 100 rpm**




✓ **THREE STAGE TANDEM**

**5 sizes, up to 17" bore, 34" O.D., and 3,410,000 lb. capacity at 100 rpm**

**Complete Specifications** on Rollway Tandem Thrust Bearings, as well as other up-to-date information on bearing design is yours for the asking. See your Rollway engineer, or write: Rollway Bearing Company, Inc., Syracuse, N. Y.

**Tandem Thrust Bearing manufactured by Rollway Bearing Company, Inc. under U.S. Patent Number 2,374,820.**

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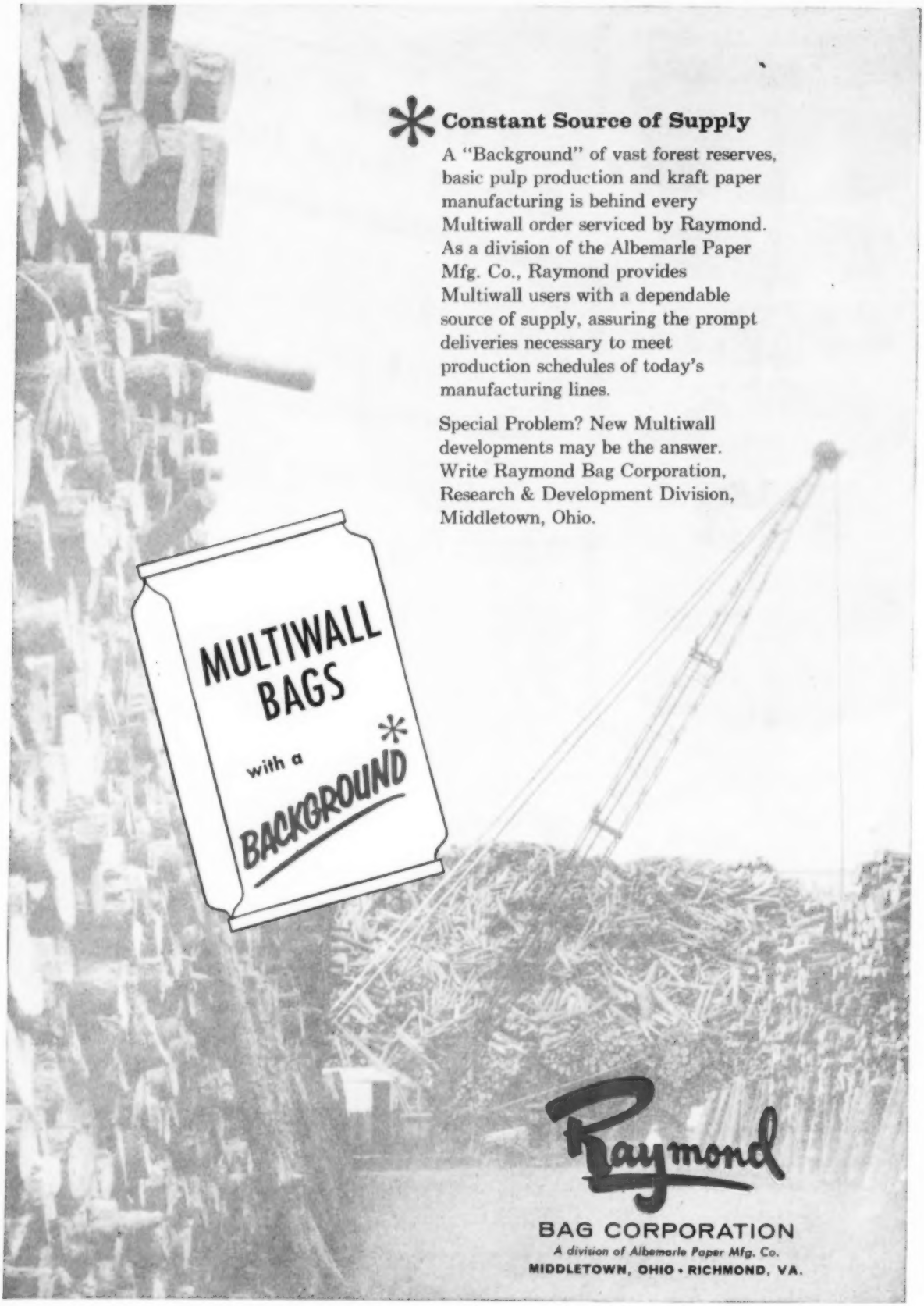


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# N.S.G.A.-N.R.M.C.A. Convention Program

## Hotel Roosevelt, New Orleans, La., Feb. 16-19, 1959

MONDAY, FEBRUARY 16

Conference on Operation of State and Area Associations

Panel Discussion:

"How to Plan Interesting and Well-attended Meetings" — Paul Lenchuk, moderator, Florida Concrete and Products Association, Inc.

Claude L. Clark, panel member, Ohio Ready Mixed Concrete Association

Thomas E. Durkin, panel member, Ready Mixed Concrete Association of Wisconsin, Inc.

"A Public Relations and Safety Course for Drivers"—Mr. Clark

"How Oklahoma Organized and Activated a Successful Ready Mixed Concrete State Association"—Joe E. Offutt, Oklahoma Ready-Mixed Concrete Association

"From the Standpoint of the Businessman, What Can a State Association Do for the Industry?" — John W. Winkworth, vice-president, Winkworth Fuel & Supply Company, Detroit, Mich.

TUESDAY, FEBRUARY 17

9:30 a.m.—Session 1 (simultaneous with Session 2)

NATIONAL SAND AND GRAVEL ASSN.

Address of the President—E. Phil Gemmer, Houston, Tex.

"Public Relations Program of the Sand and Gravel Industry Moves Ahead on a Wide Front"—E. K. Davison, chairman, Committee on Public Relations

"Evaluation of Dust and Noise Conditions at Typical Sand and Gravel Plants" — Dr. H. H. Schrenk, managing director, Industrial Hygiene Foundation, Pittsburgh, Pa.

"Public Relations and the Zoning Process"—W. I. Thieme, vice-president of Indiana Operations, American Aggregates Corporation, Greenville, Ohio

"The Public Relations Value of Annual Reports by Corporations"—William E. Clark, executive vice-president, Dravo Corporation, Pittsburgh, Pa.

Election of officers

Consideration of proposed constitutional amendment

TUESDAY, FEBRUARY 17

9:30 a.m. — Session 2 — (simultaneous with Session 1)

NATIONAL READY MIXED CONCRETE ASSOCIATION

2:00 p.m.—Session 3—No simultaneous session

NATIONAL SAND AND GRAVEL ASSOCIATION

NATIONAL READY MIXED CONCRETE ASSOCIATION

"What Does the Market Hold for Sand and Gravel and Ready Mixed Concrete in 1959?"—William Moore, president, J. P. O'Connell Co., Boston, Mass.

"Federal Tax Developments in 1958"—John T. Sapienza, Counsel for Associations, Washington, D. C.

"The Democratic Congress and the Republican Administration Face Tough Decisions in 1959 — with 1960 in Mind" — Vincent P. Ahearn, executive secretary

Presentation of NSGA and NRMCA safety trophies

WEDNESDAY, FEBRUARY 18

9:30 a.m.—Session 4 (simultaneous with Session 5)

NATIONAL SAND AND GRAVEL ASSN.

"A Review of Operating Problems in the Sand and Gravel Industry"—Irving Warner Jr., vice-president, Warner Company, Philadelphia, Pa.

"Summary of Studies by Warner Company of Excavation and Plant Transportation" —E. Norman Bernhardt Jr., Warner Company, Philadelphia, Pa.

"An Analysis of Plant Transportation by Belt versus Heavy-Duty Trucks Coupled with Shovel Excavation"—A. H. Baxter, general superintendent, Consolidated Sand & Gravel Ltd., Toronto, Ont., Canada

"An Analysis of the Relative Economy of Wire Cloth versus Punched Plate for Screening Gravel"—W. L. Price, engineering manager, Keystone Division, Dravo Corporation, Pittsburgh, Pa.

"Removal of Deleterious Materials from Gravel by Means of Jigs" — William E. Hole Jr., vice-president, American Aggregates Corporation, Greenville, Ohio

WEDNESDAY, FEBRUARY 18

9:30 a.m.—Session 5 (simultaneous with Session 4)

NATIONAL READY MIXED CONCRETE ASSOCIATION

12:30 p.m.—Joint luncheon

Presentation of honorary memberships

Address by The Honorable deLesseps S. Morrison, Mayor of New Orleans

WEDNESDAY, FEBRUARY 18

2:30 p.m.—Session 6 (simultaneous with session 7)

NATIONAL SAND AND GRAVEL ASSN.

An Open Forum on Gravel as Railroad Ballast—Discussion leader to be selected

"Gravel in Bituminous Mixtures"—speaker to be selected

"Plant-Mixed Gravel-Sand-Clay Mixtures for Stabilized Base"—speaker to be selected

2:30 p.m.—Session 7 (simultaneous with Session 6)

NATIONAL SAND AND GRAVEL ASSN.

NATIONAL READY MIXED CONCRETE ASSOCIATION

"Effective Uses for Mobile Radio in a Ready Mixed Concrete Operation"—William J. Hicklin Jr., chairman, Joint Committee on Mobile Radio

"Alternative Methods Open to Producers in the Use of Mobile Radio"—Mr. Tobin

"Frequency Co-ordination Procedures in the Special Industrial Radio Service"—Raymond Doyle, Welex, Halliburton Company, Fort Worth, Tex.

THURSDAY, FEBRUARY 19

9:30 a.m.—Session 8 (simultaneous with Session 9)

NATIONAL READY MIXED CONCRETE ASSOCIATION

THURSDAY, FEBRUARY 19

9:30 a.m.—Session 9 (simultaneous with Session 8)

NATIONAL READY MIXED CONCRETE ASSOCIATION

THURSDAY, FEBRUARY 19

2:00 p.m.—Session 10 (simultaneous with Session 11)

NATIONAL SAND AND GRAVEL ASSOCIATION

NATIONAL READY MIXED CONCRETE ASSOCIATION

"A Review of Engineering Research Problems of Sand and Gravel and Ready-Mixed Concrete Industries"—Stanton Walker, Director of Engineering

"Mineral Characteristics of Concrete Aggregates and Their Significance"—Bryant Mather, chief, Special Investigations Branch, Concrete Division, Waterways Experiment Station, Jackson, Miss., and secretary, A.S.T.M. Committee C-9 on Concrete and Concrete Aggregates

"The Effect of Maximum Size of Aggregate on Strength of Concrete"—Delmar L. Bloem, associate director of engineering

"Lightweight Aggregates from the Point of View of the Sand and Gravel and Ready-Mixed Concrete Producer"—speaker to be selected

"Report of Exploratory Tests on Effect of Concrete"—Richard D. Gaynor, staff of N.S.G.A. and .R.M.C.A.

THURSDAY, FEBRUARY 19

2:00 p.m.—Session 11 (simultaneous with Session 10)

NATIONAL SAND AND GRAVEL ASSN.

NATIONAL READY MIXED CONCRETE ASSOCIATION

"Our First Year's Experience with Major Medical Coverage in the N.R.M.C.A.-N.S.G.A. Group Insurance Plan"—Mr. Tobin

"Progress Report on the New N.S.G.A.-N.R.M.C.A. Pension and Retirement Plan" —Donald Shepherd, Plan Consultant

"Methods of Organization and Administration of an Employee Credit Union"—Herbert G. Jahncke, vice-president and treasurer, Jahncke Service, Inc., New Orleans, La.

"Communicating With Employees Through a Company Magazine"—speaker to be selected.

"An Appraisal of the Results of Industry Bargaining with Labor Unions in 1958 and Danger Signs for 1959"—Mr. Ahearn

## N.C.S.A. Program

(From p. 148)

Session for Executives
(Admission by card only)
Floridian Room

John F. Lane, Gall, Lane and Howe, Washington, D. C., General Counsel, N.C.S.A., presiding

9:30—"Tax Advantages of a Pension or Profit Sharing Plan for the Owner and Key Employees"—I. Austin Kelly III, president, National Employee Relations Institute, New York, N. Y.

10:00—Discussion

10:15—Coffee Break

10:30—"Federal Regulations; Percentage Depletion and Depreciation; Taxes, and Labor Relations"—general discussion led by John F. Lane

12:00—Adjournment

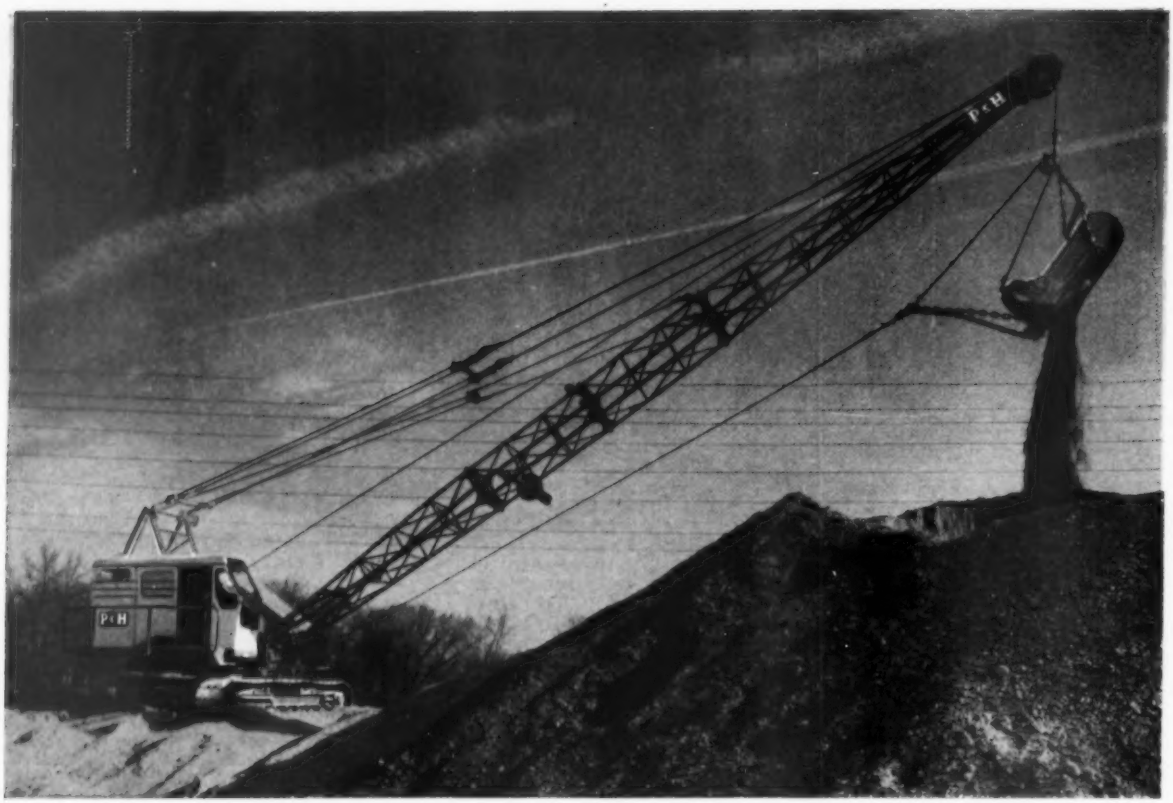
Manufacturers Division Luncheon
(For members of the Manufacturers Division only)
Medallion Room
12:30

Introduction of new officers and executive committee—L. A. Eiben, chairman, Manufacturers Division, N.C.S.A., president, Northern Blower Co., Cleveland, Ohio

Afternoon
Open for Individual Plans

Evening
HAWAIIAN LUAU
Dinner—Entertainment—Dancing
(Informal)
Patio
6:30-11:00

(Continued on page 176)

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## produces "profit-tons"

2-cycle P&H Diesels are available in 2, 3, 4 and 6 cylinder models from 40 to 280 H.P.

Owners and operators everywhere are enthusiastic about the P&H Diesel powered 1½-yard P&H 655B Dragline. They have found that this 4 cylinder P&H Engine reduces cost per ton because it has all of the needed power—the quick response for fast swings—the simplicity of design to make servicing quick and easy.

A rugged, heavy-duty engine with high torque, the P&H Diesel provides the power to really dig in and do a days work. It operates best on No. 2 fuel oil and burns less of this low cost fuel. 25% fewer parts and all wearing parts interchangeable assure low maintenance cost. With the simplified P&H fuel injection system *one adjustment times the entire engine.*

For all your sand and gravel equipment—including rock crushers, clamshells and front end loaders—specify the one diesel with all the features that increase production and lower tonnage cost—P&H Diesel! See your P&H dealer or write for "Power For More Profit," Bulletin Z-26.

**HARNISCHFEGER**

P&H **Diesel Engine Division**
**Crystal Lake, Illinois**

# IRS expects you to know what the score is on

# Expense Account Deductions

By PAUL LOCKWOOD

**Expense accounts of certain plant executives and employees now will be subjected to a closer examination by the Internal Revenue Service than heretofore. Here are some suggestions for applying the latest rulings to your own expenses, for lower taxes and with less trouble.**

THE Internal Revenue Service has lowered the boom on entertainment and travel expenses. A recent IRS ruling and a special section on the Form 1040 have been released, covering all entertainment and expense tax problems.

Here are some questions and answers about things you will need to do to be in the clear on expense accounts, so that you can get the maximum deductions on your income tax return.

*Does everyone have to report expenses on his income tax return?*

No. Executives and employees who account to their employers for travel and entertainment expenses and are reimbursed do not need to report this on the tax return. You need only state that the amount advanced or reimbursed was not more than the amount spent.

However, the new regulations do make it necessary for an employee who is related to the owner of the business to prove his expenses. This also applies to majority stockholders in the cement plant.

As a general rule, the Internal Revenue Service takes the accounting of the company at face. It is assumed that if the company has approved the expense (except for relatives or major stockholders, management knows that it was connected with business and that it was paid. The recent rulings indicate that the employee who has accounted to his company will not be required to prove his expenses on his tax return.

Employers and executives who do not account to their employers for travel and entertainment expenses will be required to report this information on their income tax returns.

*What business expenses can be deducted?*

Any and all business expenses of travel and entertainment can be taken as an income tax deduction. However, you must be able to prove that: (1) you actually paid the travel and entertainment expenses claimed; and (2) the expenses were not personal, but for business purposes.

As you can see, these two requirements are the main reason the Internal Revenue Service is checking entertainment and travel expenses so closely. It is checking on these two things . . . *actually paid* and *for business purposes.*

*What are the requirements for a business expense?*

There is no hard and fast rule on this matter. Court cases have a bearing on the final decision, but circumstances alter cases. For instance, you can have a business expense for entertainment that does not produce business. You take a customer to dinner and fail to close the deal. As long as this is a customary practice, you can claim the expense as a deduction if it is considered "necessary."

You will be guided by two parts of the Internal Revenue Code that set up the general rules for entertainment and travel expenses:

1. The expense must be ordinary — something done frequently in your business.
2. It must be necessary expense — one that is reasonably expected to produce business.

*Must I travel in the most economical way?*

No. As long as your business trip is considered ordinary and necessary, you may travel in any way you prefer. For instance, you may take a deluxe flight rather than a tourist flight, a Pullman rather than chair car, or any other first class accommodations you want.

You must, however, take the *most direct route* or charge off the expense of any side trips for pleasure. For instance, traveling from San Francisco to New York *via* New Orleans would not be deductible unless you had business in New Orleans. You would be permitted to deduct only the cost of the direct trip between San Francisco and New York.

*Can I deduct my wife's expenses?*

This is one point Internal Revenue Agents check carefully. Unless you can prove beyond a shadow of a doubt that your wife's presence is essential for business purposes, you cannot deduct her expenses on a trip. Be sure your wife is doing something connected with business while she is on the trip if you plan to deduct her expenses.

You do get a break, however, on many travel and entertainment plans. For instance, if you travel by air, your wife can go for half of your first-class fare under certain conditions. Suppose that your trip costs $300, and her fare is $150. You can deduct the full $300 of your expense, rather than half of the total ticket, or $225. The same holds true of hotel expenses. In the case of a $10-a-day room for one person which costs $12 for two, you could deduct the $10 as your business expense; and the $2 would be a personal expense.

*What if I entertain at home?*

In some cases an executive who entertains in his home for business purposes can deduct the cost of the entertainment. This would include food and drink and extra help needed to handle the entertainment.

It is a touch-and-go proposition to prove that the entertainment is a "necessary and ordinary" business expense. The fact that everyone is a potential customer of your cement plant does not entitle you to entertain every one and claim the expense as a tax deduction.

*How can I prove my travel and entainment expenses?*

Keep records!

It sounds simple, but most people hate to bother with keeping records. At the end of the year, they try to reconstruct their expenses for the year. It is almost impossible. Something is apt to be overlooked, and a tax deduction may be lost; or something that cannot be proved is included, and then there is trouble.

Since the burden of proof is on you, it is most important that you keep detailed records of all entertainment and travel expenses to realize maximum tax deductions.

*What kind of records must I keep?*

To avoid any trouble with your deduction, you will need to have records as nearly complete as possible. You will need to have a record of the date of the entertainment, the persons involved, the time, and the details of all expenses.

You can keep this account on a day-by-day record book along with your appointments. You can file a separate form each day on which you travel or entertain. Or, you can keep this information on individual cards or forms, listing all the essential information to support your income tax deductions.

*Can I use my cancelled checks for supporting evidence?*

Yes, but to be in the clear, you will need some details on the check and/or stub. For instance, checks written to "cash" for round amounts such as $50 need to be supported with more details. Check stubs that say briefly "travel" are not sufficient.

Here is another matter you should consider about your cancelled checks as record keeping devices. Obviously, you do not pay all expenses of entertainment and travel by check. Thus, if you use this system altogether, you will be overlooking a lot of out-of-pocket expenses (tips, for instance) that can be income tax deductions if you keep a record of them.

*Can I deduct automobile expenses?*

Yes. An automobile that is used only for business purposes can be handled as any other piece of equipment in your cement plant. However, when there is a part-pleasure and part-business use of the automobile, this must be reported on your income tax.

The Internal Revenue Service has a worksheet (Form 2106) that helps calculate the cost of using your automobile for business. It includes information and schedules for figuring depreciation, determining the percentage of your gas, oil, service, repairs, parking, etc., which can be considered as a business expense.

You are not required to file Form 2106 with your income tax form, but you will find that it is most helpful in calculating your taxes. When it is submitted, it is easy for an agent to check it in the office rather than making a call on you personally to clarify any points that are not clear.

Following these suggestions will help make your income tax reporting easier next year . . . you will have the facts to figure your tax; you will have the proof, if necessary; and you will save trouble and time in reporting your tax. Also, you will save income tax dollars by taking all that you are entitled to deduct.

---

**Guide to Consulting Engineers Published in New Edition**

Another edition of Engineering Consultants, directory of the American Institute of Consulting Engineers, has been published. It contains a list of qualified engineers and their firms, with some biographical data, as well as information concerning the services in the fields in which they serve. Also included is a classified index for convenience in locating engineers who handle particular types of problems.

Published by the American Institute of Consulting Engineers, 33 West 39th Street, New York 18, N. Y. Price, $2.50 per copy, cloth-bound edition; $1.50 per copy, paper-bound.

**National Gypsum Co. Board Visits Newly-Acquired Plant**

The board of directors of National Gypsum Company recently inspected the American Encaustic Tiling Company's properties and plant at Lansdale, Pa., and a new plant addition—now under construction.

National Gypsum, a leading producer of building materials, acquired American Encaustic in August.

After a tour of the plant, the directors held their regular monthly meeting—usually held at National Gypsum's headquarters in Buffalo—in the American Encaustic offices.

Canadian manufacturers of portland cement shipped or used 737,622 tons of cement in September, 1958, compared with 721,140 tons in the previous month. In 1957 the September shipments amounted to 669,256 tons. Actual production for September, 1958, was 611,533 tons, compared with 644,424 tons in September, 1957.

*product:*

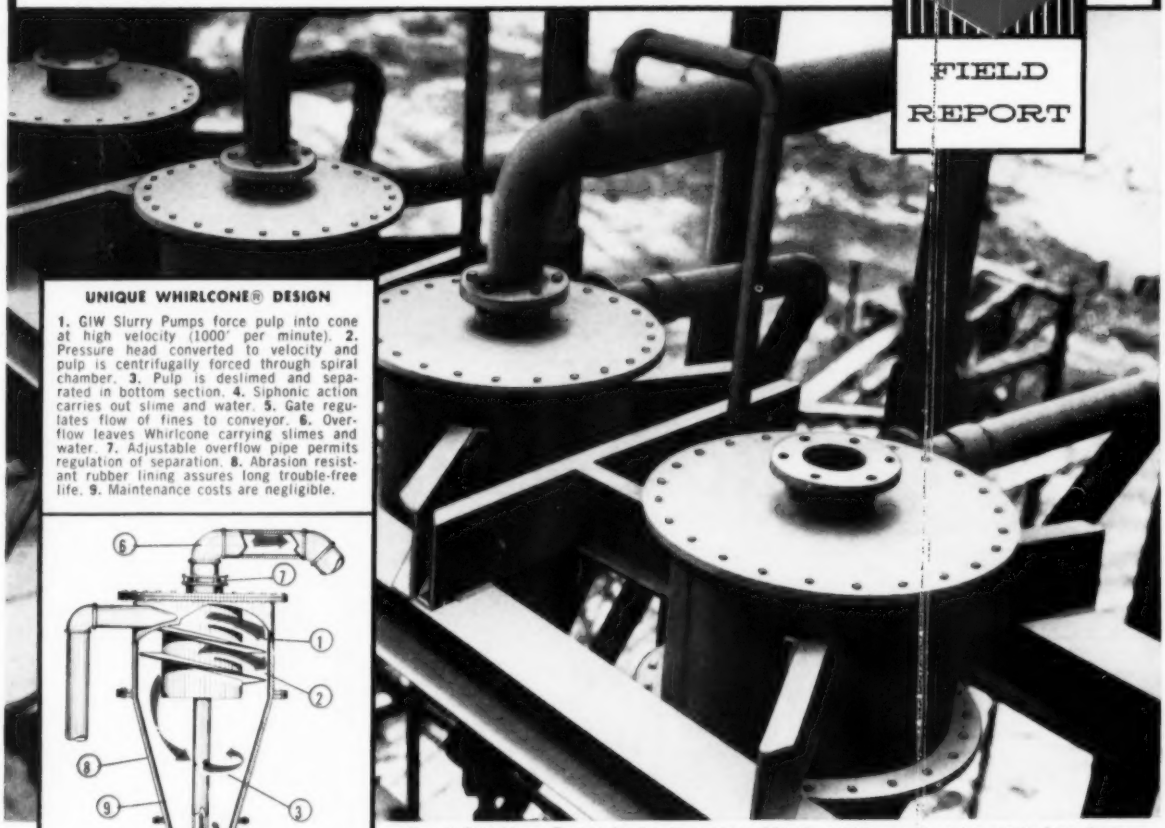
COTTRELL WHIRLCONE® SEPARATORS

*customer:*

BECKER COUNTY SAND & GRAVEL CO.

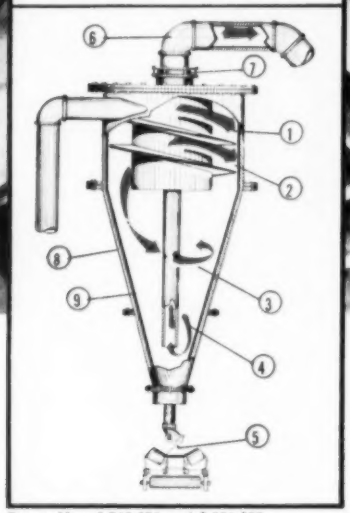
GIW

FIELD REPORT



**UNIQUE WHIRLCONE® DESIGN**

**1.** GIW Slurry Pumps force pulp into cone at high velocity (1000′ per minute). **2.** Pressure head converted to velocity and pulp is centrifugally forced through spiral chamber. **3.** Pulp is deslimed and separated in bottom section. **4.** Siphonic action carries out slime and water. **5.** Gate regulates flow of fines to conveyor. **6.** Overflow leaves Whirlcone carrying slimes and water. **7.** Adjustable overflow pipe permits regulation of separation. **8.** Abrasion resistant rubber lining assures long trouble-free life. **9.** Maintenance costs are negligible.




*Patent Nos. 2,738,070 and 2,806,599*

Tough GIW Slurry Pumps feed pulp to these 25" dia. Whirlcones®, which retain fines from classifier overflow. Maximum recovery rate is 20 tons per hour per cyclone. The cones will handle material from −12 mesh to lightest slime.

# Whirlcone® Separators solve difficult fine recovery problems.

The retention of fines in the −50 plus 200 mesh range posed a disturbing problem for the Becker County Sand & Gravel Co., of Cheraw, S.C., primarily because the large amount of water used in processing the sand and gravel washed out the desirable fines with the minus 200 slimes.

Fourteen 25" dia. Whirlcone® wet type cyclones installed parallel in four Becker plants solved this problem completely. Operating an average of 8 hours daily, they extract up to 100 tons of clean, fine sand per hour from wash water while the minus 200 mesh slime is discarded.

Recovered fines are used to bring sand up to specifications. Thousands of tons of valuable sand, formerly lost, soon paid for the low cost of the Whirlcones®.

GIW's highly efficient Whirlcones® are also being used in the mining fields to deslime, degrit, classify, concentrate, make dam and mine backfill and to dewater or thicken where the overflow can be returned to the process or it can be discarded.

They are available in diameters from 6" to 50". Capital cost including the pump is 20 to 50% of conventional classifiers.

If you are losing fines from material −12 mesh to lightest slimes, write today. Recommendations and literature will be forwarded promptly.

COTTRELL ENGINEERING
Division of
GEORGIA IRON WORKS CO.

GIW

*Manufacturers of pumps, dredges, separators and accessories.*

AUGUSTA • GEORGIA

Every minute of busy and idle time is recorded on tamper-proof charts.

Servis Recorder lets you know if equipment is busy or idle!

**Can Save You Thousands**

This simple $40 instrument bolts to any shovel, grader, haul truck or other machine. It makes a record of when equipment is busy and when it is idle. Now you can know exactly how busy every piece of equipment has been kept every day of the week even when you're not around.

Six recorders saved one firm $40,000. Even one recorder could save you from making an unnecessary purchase of additional equipment. Send for illustrated folder today.

The **SERVICE RECORDER** Co.
1011 Rockwell Ave., Cleveland 14, Ohio

*Enter 176-A on card, page 165*


## N.C.S.A. Program

(*From p.* 171)

FRIDAY, JANUARY 30

8:30-12:30—Registration—Caribbean Room
General Morning Session
Grand Ballroom

Charles Coburn, president, Waukesha Lime and Stone Co., Inc., Waukesha, Wis., presiding

9:00—Motion Picture

9:30—Report of auditing committee

9:45—"Large Size Aggregate Bituminous Concrete Base Construction"—H. M. Bixby, field engineer, N.C.S.A. Washington, D. C.

10:15—"Bituminous Concrete Placing—Operation and Control"—Donald D. Dagler, district engineer, Asphalt Institute, Harrisburg, Pa.

10:45—"The Global Picture—Uncensored"—John Morley, officially accredited correspondent, United States Government, United Nations, NATO, SEATO, and Baghdad Pact Nations, Pacific Palisades, Calif.

11:20—"Getting the Job Done through Others"—Dr. Burnice H. Jarman, professor of education, George Washington University, Washington, D. C.

12:00—Adjournment

## Aggregate Resources Studied By U. S. Bureau of Mines

Growing demands for construction materials for interstate highways and new buildings have resulted in expansion of long-range studies by the U. S. Bureau of Mines involving the field of aggregates.

During the 1959 fiscal year, which began July 1, the Bureau will continue its studies concerned with literature and field surveys of occurrence and distribution of sand, gravel, crushed stone, and other heavy mineral aggregates, together with output and economic information, mining and processing methods, uses, and markets.

The study now is centered on operations in the north central and the southeastern states. Particular attention is being given to costs, equipment, man-hour requirements, capacities, product quality, waste disposal, specifications, markets, and local restrictions of aggregate plants.

Pioneering research on explosives, methods of fragmentation, and vibration problems is also being conducted at various quarries by the Bureau to obtain information that will increase production efficiency and to measure and determine more accurately the effects of blasting vibration.

In one phase of the research, fundamental studies of the mechanics of rock breakage by explosives are being conducted by means of a special strain gauge developed by the Bureau of Mines. This gauge can be cemented into a diamond drill hole in rock and will detect the transient wave motions generated by the detonation of explosives. Tremors picked up by such gauges are recorded on high-speed oscilloscope drum cameras for studying the various phenomena that take place as the rock is broken.

The ultimate purpose of such studies is to gain a better knowledge of how rocks are broken by explosives, thus leading to more precise blasting methods and greater economies in the placing of drill holes and the use of explosives.

## Material Service Merger With Gen. Dynamics Shelved

Merger talks between Material Service Corporation and General Dynamics Corporation have been broken off. According to a joint announcement from both firms, talks were suspended due to technical difficulties.

Henry Crown, chairman of Material Service, said that substantial progress had been made, but that the proposed merger is not feasible at this time.


Rexarc
"King of the Arc"
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The Complete Hard Facing Line
MANUAL and AUTOMATIC
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Write for Free Brochures
The Sight Feed
GENERATOR COMPANY
WEST ALEXANDRIA, OHIO, U.S.A.

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FOR THE CONTROL OF ROCK, ORES, ETC.
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# SMIDTH

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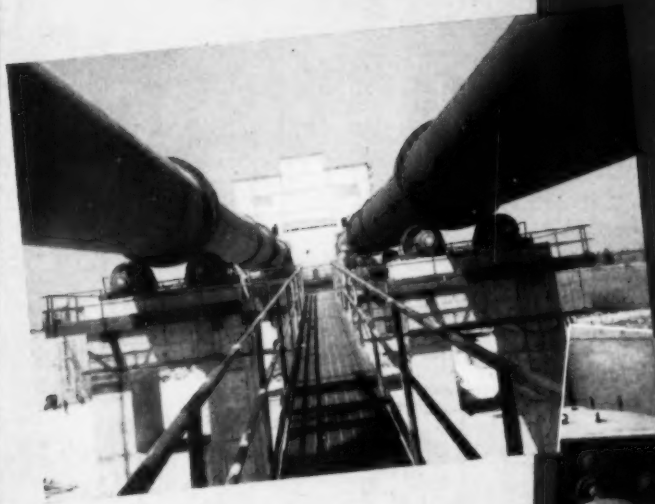

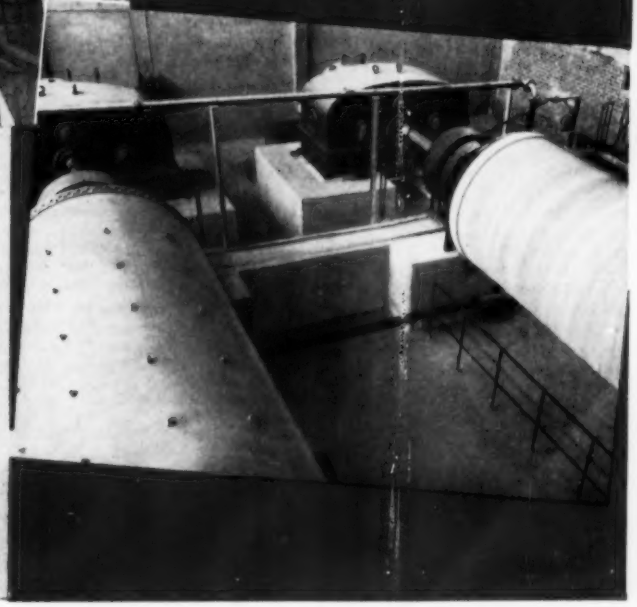

**F. L. SMIDTH & CO.**

*Engineers and Machinery Manufacturers*

11 WEST 42nd ST., NEW YORK 36, N. Y.

## How three Eastern drillers

# PARLAYED 3 DRILLMASTERS INTO 18

## with big profits from the I-R DOWNHOLE drill

These three case histories tell a story that is vitally important to anyone engaged in blast hole or water well drilling. If you want to improve your profit picture in a growth business, it will pay you to look into the many exclusive advantages of the I-R Drillmaster and DOWNHOLE drill. Ask your Ingersoll-Rand representative for complete information, or send today for a copy of Bulletin 4179.

### Sullivan Trail Coal Co.
**West Pittston, Pa.**

To speed coal stripping operations at a number of separate mining properties, Sullivan Trail purchased its first I-R Drillmaster on June 7, 1955. This was a TRUCM rig, mounted on a 6-wheel highway truck and equipped with the revolutionary I-R DOWNHOLE drill. The speed with which this unit penetrated the hard and broken rock overlaying the coal strata made an immediate "hit"—and its ability to quickly change over to straight rotary drilling for the shales and less abrasive formations made it even more desirable. The investment proved so profitable that *two more* TRUCM units were purchased on Feb. 3, 1956—and still *another*, on Nov. 2, 1956! This fleet of four rugged and highly mobile units proved the ideal solution to all jobs where frequent over-the-road movements were required. And for the large stripping operations, where one drill could be kept on the job most of the time, *two* crawler-mounted DM-3 Drillmasters were added on Aug. 8, 1957. All *six* of these heavy-duty blast hole drilling rigs are equipped with I-R DOWNHOLE drills and long-lasting Carset Bits—an unbeatable combination for lower cost per foot of hole.

### C. S. Garber and Sons
**Boyertown, Pa.**

This contract driller purchased his first TRUCM Drillmaster unit on Jan. 25, 1955—primarily for blast-hole drilling on quarry jobs where fast moves were required from one quarry to another. Equipped with the I-R DOWNHOLE drill, it set entirely new standards of performance and costs. Then they tried it on a *water well job*—with such phenomenal success that *another* TRUCM unit was ordered on March 23—and *two more* on June 7 of the same year! The profit potential of these machines for water well drilling soon made this a major use of the DOWNHOLE drill, and business boomed to the point that *two additional* TRUCM units were added to the Drillmaster fleet—in April and July of 1957. Today, these six I-R Drillmasters, with I-R DOWNHOLE drills, are meeting all requirements for a greatly increased business in both quarry and water well work—an increased work load for which the machines are largely responsible. The ruggedness and roadability of the TRUCM mounting makes it ideal for contract drilling where you're here one day—and miles away the next.

### New Jersey Drilling Co.
**Madison, N. J.**

Today, this company is one of the largest and most successful contract drillers in the State—operating a fleet of *six* I-R Drillmasters for both quarry and water well work. This "success story" really began only a little over three years ago. On May 25, 1955, to be exact—the date on which they purchased their first DM-2 crawler-mounted Drillmaster with I-R DOWNHOLE drill. Here, too, it was used initially for blast hole work in quarries—then applied to water well drilling. This proved so profitable that *another* DM-2 was purchased on Nov. 9, 1955. And in April, 1956, a TRUCM unit was obtained for use solely as a high-speed, highly mobile water well drilling rig. As business and profits increased, *two more* DM-2s were purchased—in July and August of 1956. And on Sept. 17, 1957, the entirely new TRUCM-3 unit, on I-R's specially designed Crane Carrier vehicle, completed the present Drillmaster fleet. All six units use the I-R DOWNHOLE drill—the ideal setup for hard rock water well drilling. To prove the point, one TRUCM-3 unit drilled 50 wells in granite in 3 months, averaging 100′ per day.

**Ingersoll-Rand**

S-866

11 Broadway, New York 4, N.Y.

*A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK*

# Industry Personalities

PHILIP E. CARLSON and PAUL E. ANDERSON were recently elected officers of the Lehigh Portland Cement Company, Allentown, Pa.

Mr. Carlson, assistant vice-president—manufacturing, joined Lehigh in November, 1946. Appointed

Philip E. Carlson

Paul E. Anderson

plant engineer at Buffalo in March, 1947, he became plant manager at Birmingham in April, 1951. He was appointed assistant to the manufacturing department in October, 1954.

Mr. Anderson was employed in the credit department in May, 1948, and promoted to assistant credit manager in February, 1954. Promotions to credit manager, assistant secretary, and assistant treasurer followed.

R. B. McKeagney

ROBERT B. MCKEAGNEY has joined the New Haven Trap Rock Company, Conn., as field engineer. This is a newly-created post by which the management plans to extend the company's services throughout the southern New England area.

Mr. McKeagney comes to New Haven Trap Rock directly from five years as managing engineer of the Asphalt Institute. In this position, he directed all engineering and administrative work in the 20 states along the east and gulf coasts of the United States.

The appointment of GLENN C. MELBY to the position of manager, materialite architectural department, has been announced by the Material Service Corporation. A civil engineer, Melby has been a designer of many major reinforced concrete structures, notably cement and steel plants and hydro-electric installations. He has also served as a design project engineer on work in the United States, India and South America.

GLENN EDWARD JACKSON has been appointed Director of Marketing Research for Marquette Cement Manufacturing Company, Chicago, it was announced here today by S. L. Cribari, Marquette vice-president.

Jackson for the past nine years had been employed in the sales statistics division of Caterpillar Tractor Company in Peoria, Ill.


FOR DEPENDABILITY
PLUS ECONOMY
REPLACE WITH
INDIAN BRAND

Get the most out of your present equipment. When you need replacements, remember we started in 1913 to build our reputation in the Manganese Steel field for dependability plus economy.

Insist on
INDIAN BRAND
MANGANESE STEEL

Shovel Dippers • Dipper Teeth
Shovel Treads
Crusher Jaw Plates
Mantles • Concaves
Bowl Liners • Roll Shells
Pulverizer Hammers
Grate Bars • Breaker Plates
Ball Mill Liners • Screen Plates
Misc. Manganese Steel Castings

THE FROG, SWITCH AND MANUFACTURING COMPANY
Carlisle, Pennsylvania • Established 1881

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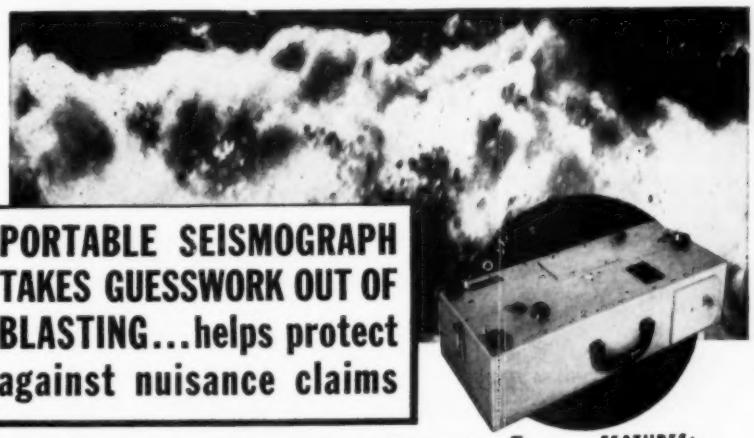

PORTABLE SEISMOGRAPH TAKES GUESSWORK OUT OF BLASTING...helps protect against nuisance claims

If you blast regularly, a Sprengnether seismograph can furnish you with accurate, permanent records of the ground displacement.

By studying these records, you can determine the most effective charge and proper timing of delays. Helps improve both efficiency and safety of your operation.

In the event of exaggerated nuisance claims, such records when presented as evidence in court gives you a strong defense.

It takes only a few minutes to learn to set up and operate this instrument. No previous experience or technical training is necessary.

Basic interpretation of your records may be made by your operator.

*Internationally Known Mfrs. of Seismological, Geophysical Instruments*

FEATURES:
Extremely Accurate — (within 0.1%)
Self-Contained — (requires no external connections)
Portable — (38 lbs.—25 x 10 x 8 in.)
Extremely Rugged and Dependable

Write for complete information.

W. F. SPRENGNETHER INSTRUMENT COMPANY INC.
4567 SWAN AVENUE • ST. LOUIS 10, MISSOURI

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# HOW TO SAVE $175? $220? $270? $310? $340? PER DAY...

*For packing industrial explosives

One of these figures probably comes close to the potential savings in YOUR operation when you switch from your present method to the new and improved Bemis Explosives Bags. It depends, of course, on how many holes you shoot per day, and how heavily you load the holes.

Take, for example, the figure of $270 per day savings. It works out this way: Cans cost approximately 70 cents each. Assuming you load 10 cans per hole and shoot 60 holes per day, your container cost is $420 per day.

But Bemis Explosives Bags cost only 20 to 25 cents each. At 10 bags per hole and 60 holes per day, that is $150—*a saving of $270 per day.*

Furthermore, Bemis Explosives Bags are the toughest *really waterproof* explosives bags you can find. Leave them in wet holes three days or more . . . and they still shoot perfectly. The Bemis extruded seamless poly liner provides the waterproofness; the tough burlap or Bemis Flexiply® (multi-ply creped kraft) outer tube supplies the strength.

Let us go into your particular problem thoroughly. Write or phone us and a Bemis specialist will see you promptly.

**YOU DON'T HAVE A BAG-PACKER?**

There's a simple solution to that problem . . . a Bemis Packer-Ette. The capital investment is surprisingly small. It maintains a steady production of six bags per minute. Two-man operation . . . substantial labor saving. Accuracy to 3 ounces on a 33-lb. bag. *Complete* cleanliness.

You can't beat that. Let us tell you about the Packer-Ette, too.

**Bemis**

**General Offices—408 Pine Street, St. Louis 2 • Sales Offices in Principal Cities**

J. M. McNerney

JOHN M. MCNERNEY, district engineer for the Portland Cement Association's Los Angeles office, has been appointed manager of the Association's western regional office, also located in Los Angeles.

Mr. McNerney, who will hold both posts until a new district engineer is designated, succeeds Hugh D. Barnes in the regional position. Mr. Barnes has been named to the new post of supervisor of field promotion.

JOHN E. MILLER JR., of El Dorado, Ark., has been named sales co-ordinator for Arkansas Cement Corporation, a wholly-owned subsidiary of Arkansas Louisiana Gas Company. His appointment was announced by W. R. Stephens, A.L.G. president and board chairman.

Mr. Miller will have headquarters in the general sales offices of the new corporation in Little Rock, Ark. The firm is scheduled to begin production of portland cement at once at its newly-constructed plant near Foreman, Ark.

G. REED GRIMSLEY, special assistant to the general manager of the Columbia Cement Division plant at East Fultonham, Ohio, has retired from the firm after nearly 47 years in the cement industry.

At East Fultonham he served as assistant chemist, chief chemist, assistant superintendent, and finally special assistant to the general manager.

As an active member of the Portland Cement Association, Mr. Grimsley has served at various times on its technical and safety committees.

United States Gypsum Company has named THOMAS M. GRADY field manager—quality, with headquarters in the company's Boston plant.

Mr. Grady joined the company in 1948 and has served as quality superintendent for the last three years at the Stony Point, N. Y., plant.

ROBERT HUGHES has been appointed director of research and development at the Dravo Corporation, Pittsburgh, Pa., replacing W. L. Newhall, who recently retired after 33 years with the company.

DR. JOHN A. ANTHES has been named assistant director of research and development.

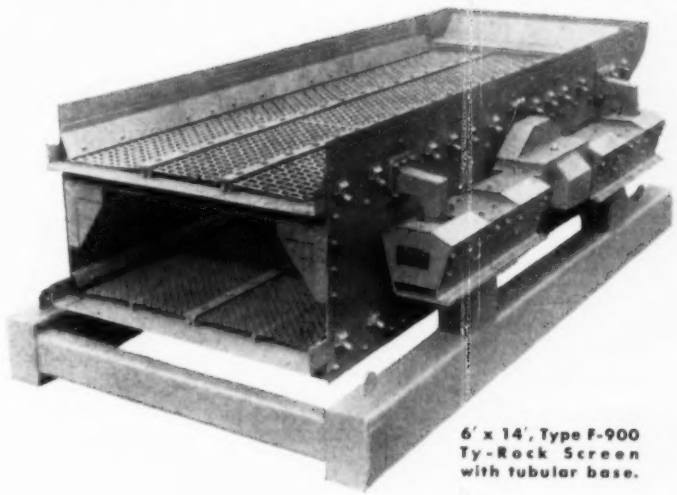
Mr. Hughes, who was born in England, first joined Dravo in 1945 and most recently served as engineering manager of the company's engineering works division.

D. Anthes, who joined Dravo in 1953, previously was a process engineer in the engineering and construction department of the machinery division.

The appointment of JAMES E. PARTLOW as assistant general sales manager of General Refractories Company, Philadelphia, Pa,. is one of a number of new sales assignments announced by D. M. Thorpe, executive vice-president.

Mr. Partlow, formerly district sales manager for the company in Houston, Tex., will be concerned primarily with sales and service activities on non-basic products.


# TY-ROCK SCREENS



6' x 14', Type F-900 Ty-Rock Screen with tubular base.

## For TOP Performance

The balanced circle-throw action of the Ty-Rock plus the full-floating action on large shear type resilient rubbers enables this screen to separate material with unequalled speed and effectiveness.

The Ty-Rock wastes no power in useless, harmful racking of buildings or supporting members. It delivers all of the intense power to the job of stratifying and separating the sizes.

*Telephone* HE 1-5400 • *Teletype* CV 586

**THE W. S. TYLER COMPANY**
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

*Enter 181 on card, page 165*

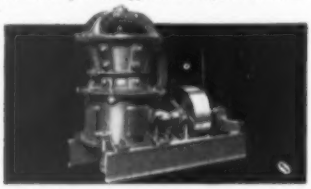
# NO MAJOR REPAIRS IN 25 YEARS*

**Sturtevant Construction Assures Long Mill Life at Top Loads**

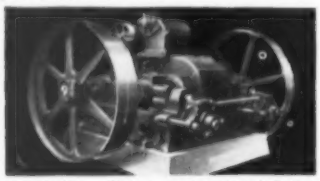
Sturtevant crushing and grinding machinery answers the long life top-load production problem for medium to small size plants. Many Sturtevants have been operating above rated capacities for more than 25 years, and *without a major repair.*

"Open-Door" design gives instant accessibility where needed — makes cleanouts, inspection and maintenance fast and easy. Machines may be set up in units to operate at equal quality and capacity.

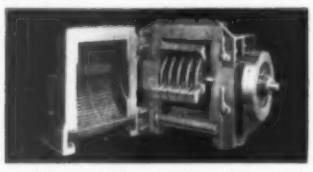
**Jaw Crushers** — Produce coarse (5 in. largest model) to fine (⅛ in. smallest model). Eight models range from 2 x 6 in. jaw opening (lab model) to 12 x 26 in. Capacities to 30 tph. All except two smallest sizes operate on double cam principle — crush double per energy unit. *Request Bulletin No. 062.*



**Rotary Fine Crusher** — Reduce soft to medium hard 3 to 8 in. material down to ¼ to 1¼ in. sizes. Capacities up to 30 tph. Smallest model has 6 x 18 in. hopper opening; largest, 10 x 30 in. Non-clogging operation. Single handwheel regulates size. *Request Bulletin No. 063.*



**Crushing Rolls** — Reduce soft to hard 2 in. and smaller materials to from 12 to 20 mesh with minimum fines. Eight sizes, with rolls from 8 x 5 in. to 38 x 20 in.; rates to 87 tph. Three types — Balanced Rolls; Plain Balanced Rolls; Laboratory Rolls — all may be adjusted in operation. *Request Bulletin No. 065.*



**Hammer Mills** — Reduce to 20 mesh. Swing-Sledge Mills crush or shred medium hard material up to 70 tph. Hinged-Hammer Pulverizers crush or shred softer material at rates up to 30 tph. Four Swing-Sledge Mills with feed openings from 6 x 5 in. to 20 x 30½ in. Four Hinged-Hammer Pulverizers with feed openings from 12 x 12 in. to 12½ x 24 in. *Request Bulletin No. 084.*

**Reports Manager W. Carleton Merrill concerning Sturtevant Swing-Sledge Mill at James F. Morse Co., Boston.*

**STURTEVANT**
**MILL COMPANY**
**104 Clayton St., Boston 22, Mass.**

***Enter 182 on card, page 165***


# Legal Decisions

## *On Industry Problems*

### Contractor Recovers Unearned Profits

Last month a higher court rendered an important decision to the effect that if a property owner breaches his contract with a contractor, the latter may recover damages equal to the full and complete profits he would have earned if he had been allowed to do the job.

For instance, in *Cetrone v. Paul Development Company,* 150 N. E. (2d) 732, the testimony disclosed these facts: A contractor named Cetrone contracted in writing to install the bituminous concrete walks and driveways at a development project for the price of 50c per sq. yd. The contract stated further that Cetrone would commence the work at once and complete the entire job not later than June 15.

The testimony showed that when Cetrone arrived on the job to start work under the contract "none of the gravel was graded or ready for hot top." Cetrone talked with one Livoli, who represented the development company. Cetrone told him that nothing was ready for the laying of hot top. Livoli told him to spread gravel and to work where he could, and that he would be paid for "all labor used in spreading the gravel."

Cetrone brought six men to the job and for a period of fourteen days they spread gravel. Then Cetrone's men were ordered off the job by Livoli.

In subsequent litigation Cetrone proved that he paid his men $1,550 for spreading the gravel and that this was a fair and reasonable charge.

The higher court held that the development company must pay Cetrone for spreading the gravel and also must pay Cetrone the profits he would have earned had he not been ordered off the job and allowed to install the bituminous concrete walks and driveways. The court said:

"Cetrone was prevented from performing by the development corporation and he was entitled to be placed in as good a position as he would have been in had the contract been performed. Such damages would include loss of profits."

### Validity of City Ordinance

A higher court decision decided recently answers a certain legal question presented me by a reader of PIT AND QUARRY only a few weeks ago. "Can a city enact a valid and enforceable ordinance which requires cement contractors to pay license fees to the city and also do work in strict compliance with other ordinances.

The answer is in the affirmative.

For illustration, in *Concrete Contractors' Association v. The Village of La Grange Park,* 150 N. E. (2d) 783, the testimony stated that a city enacted an ordinance which provided that a license costing $25 must be obtained by any person who is engaged in the business of cement contractor or the construction or repair of cement work. Another ordinance provides a specified standard quality for Portland cement, standards for the quality of lime, mortar for masonry, concrete aggregates, and proportions of plain concrete. They also prescribe standards for reinforced concrete.

The Concrete Contractors' Association filed a suit and asked the higher court to declare the ordinance invalid and void.

It is interesting to observe that the higher court held the ordinances valid and enforceable, saying:

"The licensing ordinances are designed to make effective the regulations contained in the ordinances dealing with the construction of buildings, sidewalks and the use of

*Geared by FULLER . . .*

# . . . M-R-S 38 Cubic Yard Scraper Combination equipped with R-1550 ROADRANGER®

M-R-S Manufacturing Company, Flora, Mississippi, recently announced a new 38 cubic yard, struck—48 yard, heaped—capacity scraper combination.

The 600 hp M-R-S Model 250 Tractor provides ample power to pull the big scraper at speeds up to 34 miles per hour, with a substantial power reserve for maximum gradability. When necessary, traction to the drive wheels can be increased by use of the M-R-S hydraulic weight transfer feature.

To make most efficient use of the power and traction of the Model 250, M-R-S offers as standard equipment the Fuller R-1550 9-speed ROADRANGER® Transmission.

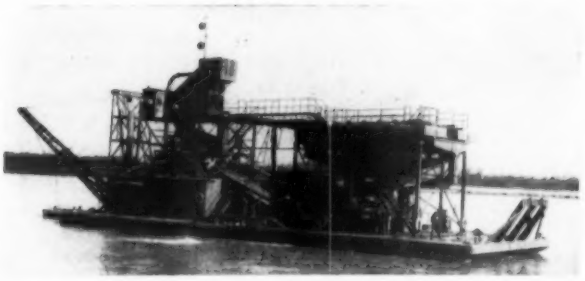
Designed for off-highway service with the largest high-speed diesel engines built, the semi-automatic R-1550 ROADRANGER features nine forward and two reverse ratios, all controlled with one gear shift lever. Short, even steps between gear ratios—averaging 38%—combined with pre-selected, automatic range shifts, permit proper gearing for all conditions at all times. Air powered countershaft inertia brake allows quick upshifts without double clutching. For faster work cycles, lower fuel consumption, longer engine life, less operator fatigue, GREATER PROFITS . . . specify Fuller. Your equipment dealer or manufacturer can recommend the most efficient, easiest-shifting Fuller Transmission for your specific operating requirements.

**FULLER** — TRANSMISSION DIVISION — MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
*Subsidiary EATON Manufacturing Company*

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

# Still Another Customer Speaks About

# —Tells Why He's CHANGED HIS MIND!



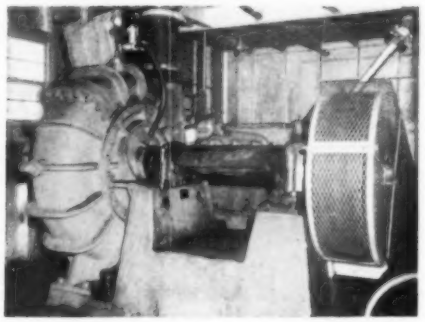
Federal Materials Company dredge at Paducah, Kentucky.

The FEDERAL MATERIALS Company

PLANTS PADUCAH, KY. METROPOLIS, ILL.

PADUCAH, KENTUCKY

*Note: Mr. Hely once thought our claims on performance of THOMAS DURABLE DREDGE PUMPS were "exaggerated." We are publishing his letter in type form to make it easier for you to read—and understand why HE CHANGED HIS MIND. No other comment from us is necessary!*



Thomas Durable Dredge Pump on Mr. Hely's dredge.

"Approximately one year ago we put in operation a complete new dredge for the production of sand and gravel for our Paducah, Kentucky plant.

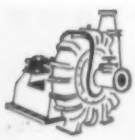
"On this dredge we installed a Thomas Pump having 12" intake and 10" discharge. This is our first use of a Thomas Pump. Our previous experience has been with various makes of dredge pumps. Prior to using a Thomas Pump we thought some of the claims made by your sales personnel on what the pump would do rather fabulous and exaggerated. After one year's use of the pump we know these claims to be unexaggerated and quite modest.

"The head on our new dredge is approximately 14 feet higher than any head we have previously pumped against and our Thomas Pump is giving us a much better production and more gallons per minute than we have ever experienced previously. We are easily averaging 300 tons per hour of specification sand.

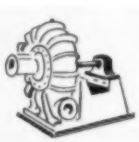
"After one year's operation we have not lost one minute or had a moment's trouble with this pump. We have not dismantled the pump as our production at the present time is not noticeably different than the first month the pump was operated. We recently were required to replace a section of discharge pipe right over the pump and in replacing this we had a very good view of the flukes on the impeller of this pump and were very surprised that the wear shown on these flukes was very negligible. From our past experience with dredge pumps we know that any pump we have used in the past would in this length of time require the replacement of several thousand dollars in worn parts."

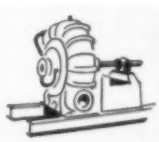
Very truly yours,
THE FEDERAL MATERIALS COMPANY
Norman L. Hely, President

We will be glad to send you photostatic copy of Mr. Hely's letter above, dated July 17, 1958, and descriptive literature on Thomas Pumps—available in sizes 6" through 16"



**THOMAS FOUNDRIES Inc.**
P. O. BOX 1111, BIRMINGHAM, ALABAMA





# Pumps

"FABULOUS AND EXAGGERATED" CLAIMS PROVED TO BE "UNEXAGGERATED AND QUITE MODEST"! !

## The Reasons: -

1 ALL WEARING PARTS MADE OF GENUINE DEPENDABLE THOMAS NI-HARD.

2 EXTREMELY RUGGED.

3 BUILT-IN HIGH EFFICIENCY.

Thomas Foundries in its own plant produces the best of abrasion metals suitable for pump construction.

- NI-HARD, THE DEPENDABLE VARIETY.
- HIGH CHROME IRONS, T-27.
- MANGANESE STEEL CASTINGS.
- CAST IRON.

DOES ANY OTHER PUMP COMPANY PRODUCE AND CONTROL ALL THESE MATERIALS IN ITS OWN FOUNDRY?

THOMAS PUMP USERS ARE THOMAS BOOSTERS


streets. In our opinion they are reasonably necessary for that purpose, and are valid."

### Must Warn Inexperienced Employee

Recently, a higher court answered the legal question, as follows: "Assuming that an employee has worked around a quarry for a long time, is the employer obligated to warn this employee of dangers in his employment?"

Employers have an obligation to warn employees of dangers connected with their employment.

The higher courts very consistently hold that if an inexperienced employee does not fully realize the danger of his particular work, it is employer's duty to warn him of the latent and unseen dangers. Failure of the employer to do so always will entitle the employee to recover heavy damages for an injury.

For example, in *Ideal Cement Company v. Hardwick,* 185 S. W. (2d) 266, it was shown that a cement company owned an electric crawler shovel which was used to load rock from a quarry upon cars on an adjacent electric railroad track which was operated by electricity taken from a high tension line carrying 2,500 volts.

In order to move the shovel, as the work of loading rock onto the cars progressed, it was necessary to detach the cable from a pole and attach it to another nearer the shovel. For several years an employee had worked as a common laborer, to maintain the track upon which the cars moved. He performed no other kind of work.

One day a foreman of the company directed this employee to disengage the electric cable from a pole to which it was attached. The employee was inexperienced and the foreman did not warn him regarding the danger. The employee received an electric shock causing severe injury for which he subsequently sued the company for heavy damages.

The higher court held the company liable because the foreman had failed to warn the employee that the operation of disengaging the electric cable was dangerous.

### Employee Acts Outside Scope

A reader asks: "Can an employee who acts entirely outside the scope of his employment receive damages or compensation for his injury?"

The answer is yes. This is so because the higher courts consistently hold that employees are entitled to compensation for injuries sustained while acting "for the benefit" of their employers.

In *Ander v. Industrial Commission,* 27 N. W. (2d) 499, the testimony showed that an employee was employed to remove clay, sod and other debris from a conveyor belt. One day while the machinery was idling he saw that the gears needed greasing. He removed the top guard and was greasing the gears when his right hand was caught in the revolving gears. He sustained severe injuries.

In subsequent litigation it was contended by the employer that the employee should not recover compensation nor damages for this injury because he was hired not to grease machinery, but primarily to pick clay and debris off the conveyor belt. In other words, the employer contended that the employee was acting outside the scope of his regular employment when he was injured.

The lower court held the employee entitled to recover compensation under the State Workman's Compensation Act, and the higher court said:

"It is contrary to the interests of the employer, the employee and the public generally to deny compensation to an injured employee on the ground that he must refrain from doing work in his employer's interest that he is not specifically authorized to do. Such a construction would reward the slothful and penalize the enterprising employee."

### Law of Silicosis

The higher courts have defined silicosis as "A form of pneumonoeosis particularly occurring in stone cutters, and other persons who inhale silica or quartz dust."

The contractors agree that to reduce hazards of silicosis the places of employment must be provided with safety devices. In fact almost all states have adopted state statutes which provide that no employer "shall require, permit or suffer any employee" to be in any employment which is not safe. In other words, no employer shall fail

THE RIGHT SCREEN FOR YOUR JOB!

Are you faced with a really tough problem in sizing . . . scalping . . . washing . . . rescreening . . . dewatering? The *right* Hewitt-Robins screen is your answer!

**Vibrex:** Here's the most versatile screen of them all! Simple, field adjustable, stroke, speed, angle to match any requirement . . . circle-throw principle with two massive self-aligning bearings . . . rock-bottom economy coupled with long-life ruggedness!

**Eliptex:** Exclusive elliptical motion for horizontal operation gives high capacity, fast material progression, and sharp sizing.

**Gyrex:** This positive-stroke, four-bearing, circle-throw screen has an unsurpassed record for stamina.

**hi-G:** A modified-resonant unit that has the extra kick for hard-to-screen materials at only a fraction of usual power requirements. Both decks are accessible for cloth changes.

All 4 in standard *suspended* and *base mounted* models!

Whatever your specific screening problems, you will find one of these Hewitt-Robins units *best* fitted for the job. For information or service, contact your local H-R representative, or Hewitt-Robins, Stamford, Connecticut.

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CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

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to "furnish, provide and use safety devices" adequate to render employment and the place of employment safe. Other state laws provide that no employer shall fail or neglect to do every thing reasonably necessary to protect the life, health, safety and welfare of such employees or frequenters; and no such employer or other person shall hereafter construct or occupy or maintain any place of employment that is not safe.

Quite obviously these laws are intended primarily to protect employee against physical disabilities and at the same time cause employers to dedicate more than usual care to protect employees against injuries and disabilities due to occupational diseases. See *McKee v. Idea,* 44 N. E. (2d) 697, where the higher court held all such laws valid and enforceable.

### Attractive Nuisance Law

The term "attractive nuisance" means something that will attract children and cause their injury.

The higher courts hold that all persons are liable in damages for injuries to children resulting from their "attractive nuisances." This rule of law is applicable to all things that naturally attract children.

For example, in *Johnson v. Wood,* 21 So. (2d) 353, it was shown that a sand and gravel company had on its premises a mortar box in which there was a mixture of lime, sand, and other ingredients which was unguarded and unprotected. This mortar box was near the street.

One day a boy threw some of the contents of the mortar box into the face and eyes of another child whereby the latter lost the sight of one eye. The injured child's parents sued the sand and gravel company for damages.

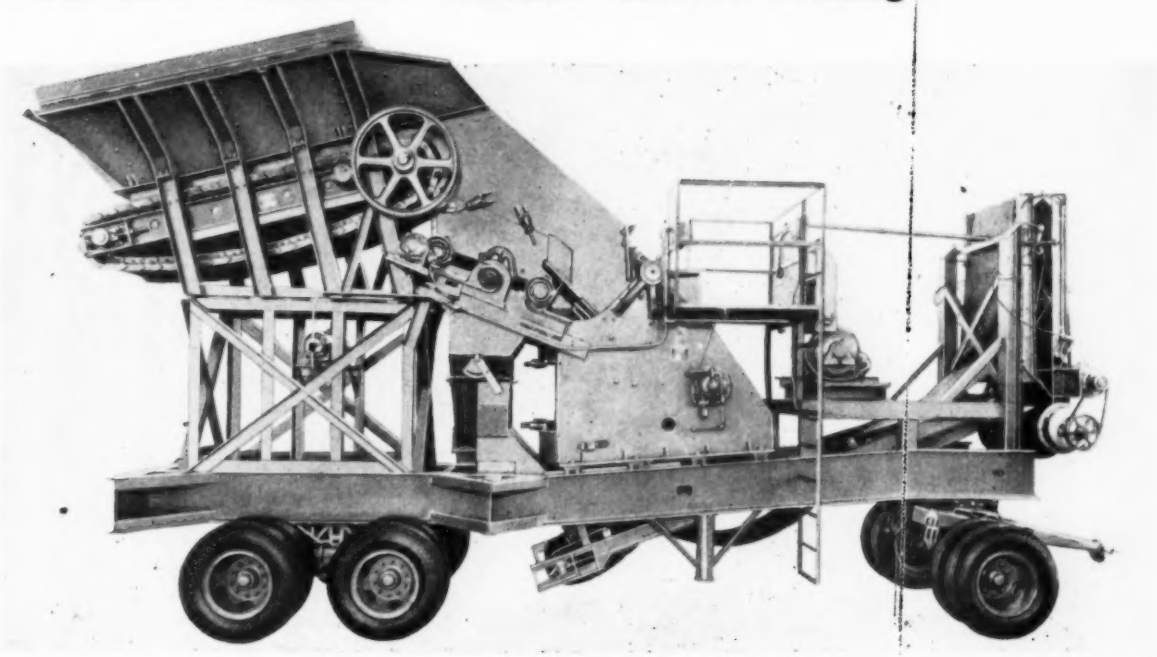
Although the lower court held the company not liable the higher court reversed the verdict, saying:

"It is a well known fact that a mortar box will lure children of tender years while it would repel those of more mature years. . . . In a case like this, it is no answer to say that appellant (child) had no business there or that her parents should have forbidden her going on the premises."

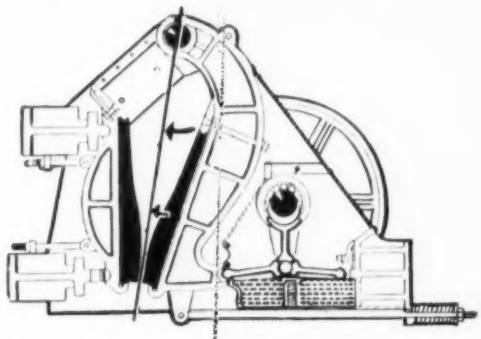
The legal motto of this decision is: While a danger may be apparent

# 5 times longer jaw plate life in a portable crusher . . .

# KUE-KEN® PRIMARY crushes without rubbing



Kue-Ken . . . the only crusher that eliminates rubbing, the main cause of jaw plate wear, is now unitized in a portable plant complete with heavy duty apron feeder, 2 deck vibrating grizzly, folding under conveyor and push-button controls. Recurring jaw plate replacements and costly downtime are cut at least 80% . . . the harder the rock, the longer the comparative jaw plate life and the greater the savings. Power consumption is far less because none is wasted by wearing out jaw plates. Kue-Ken mechanism operates in a sealed, dust-tight crankcase lubricated by filtered oil to permit higher speed for greater capacity and more uniform product. Wear is negligible and shut-downs common to conventional crushers are practically eliminated. Automatic flywheel release prevents breakage from tramp iron. Kue-Ken crushes at the lowest cost-per-ton. Available in all-electric model or furnished with diesel engine that drives crusher. Side-mount generator provides electric power for feeder, grizzly and conveyor.



See how the hinge pin is located on the center line of the crushing zone. The jaw moves in an almost straight line. Rock is instantly gripped and crushed without rubbing.

## KUE-KEN® CRUSHERS

*"Crushing without Rubbing"*

**STRAUB MFG. CO., INC. 8381 Baldwin St., Oakland 21, Calif.**

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens
Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

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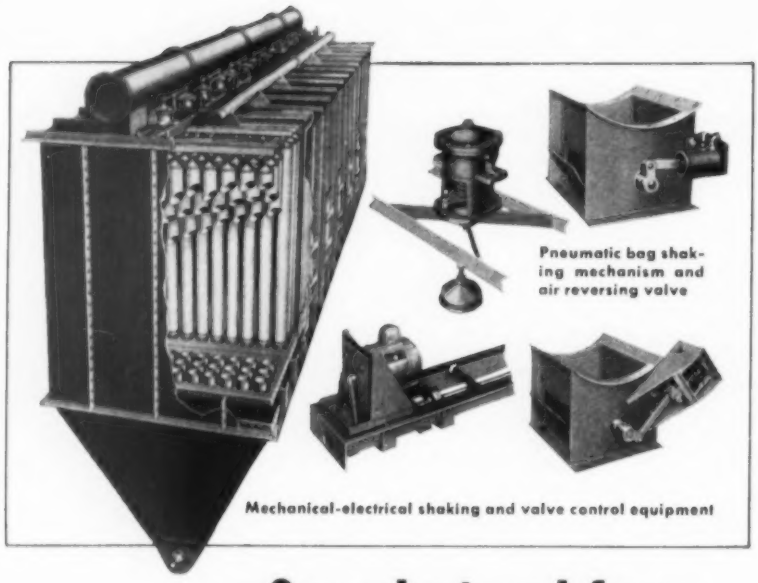


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Norblo FULLY AUTOMATIC Collection System

Whether your need is for a moderate amount of dust collection or a large scale 24 hour-a-day operation, a Norblo System will give you efficient performance at economical cost. It practically runs itself; supervision is easy — maintenance very low.

The full capacity of equipment designed for you is maintained by a number of Norblo features, most important of which is the cyclic bag cleaning or shaking action. Controlled by a highly efficient timing system, the cleaning involves only one bag compartment at a time — for a few seconds only — with no variation in capacity.

Motive power for bag shaking and air reversing valve operation can be either pneumatic or mechanical-electrical. The former is usually more economical where an ample supply of compressed air exists. The mechanical type, actuated by electric motors and duplicating the pneumatic operation, is particularly valuable for outdoor installations where compressed air lines might freeze; or for isolated locations of the equipment where compressed air is not available.

*Send a description of your air pollution problem. Let Norblo engineers suggest the best solution. Or write for Bulletin 164.*

**The Northern Blower Company**
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Norblo ENGINEERED DUST COLLECTION SYSTEMS FOR ALL INDUSTRIES

*Enter 188 on card, page 165*

to an adult, it is not so to children. Therefore, no dangerous thing attractive to children should be left in a location likely to be found by children.

A further review of late and leading higher court decisions discloses that "attractive nuisances" may be machinery, bull dozers, road scrapers, ditch diggers, motor trucks, trailers, mowers, combines, spreaders, grass cutters, and similar contrivances.

### Seller Must Refund Payments

Recently an important decision was rendered to the effect that a court never will allow a seller to take advantage of his own wrong.

For illustration, in *Stewart v. Moss,* 192 Pac. (2d) 362, it was shown that a seller sold a gravel truck to one Stewart for $5,500, and accepted $500 down. Under the contract signed by both the seller and Stewart, the latter agreed to pay an additional sum of $4,500, within one month, at which time he could take full possession and ownership of the truck.

A disagreement arose and the seller refused to deliver up possession of the truck to Stewart. The court promptly ordered the seller to refund all money, plus interest, received from Stewart and said:

". . . A seller who has retained possession of the subject matter of the sale may not, upon the default of the purchaser, retain the payments made by the purchaser, if that default has been occasioned by the conduct of the seller in refusing to cooperate with the purchaser."

### What Is Taxable?

Recently, considerable discussion has arisen over the answer to this question: What parts of a ready-mix concrete processing plant are used "directly" in processing of concrete to avoid payment annually of "use" taxes on such part? Last month a higher court clearly answered this legal question.

In *Youngstown Building Material & Fuel Company,* 149 N. E. (2d) 1, it was shown that a state law exempts from "use" tax all personal property and machinery used "directly" in the production of salable merchandise.

In subsequent litigation the higher

This 240,000-pound steam drum, built by Combustion Engineering for a large generating plant, is here being hoisted 120 feet into position by strong wire rope. It's a striking example of how . . .

# safety rides on quality wire rope

You may never hoist loads as large as this 120-ton drum. But *safe, top quality wire rope is just as important to your own operations.* For, although the price of a "bargain" rope would be less, failure of such a rope could cost you thousands of dollars in wrecked equipment. Don't be a victim of false economy. Buy a wire rope that's a quality rope—buy Wickwire Rope.

5339

WICKWIRE ROPE — A CF&I PRODUCT

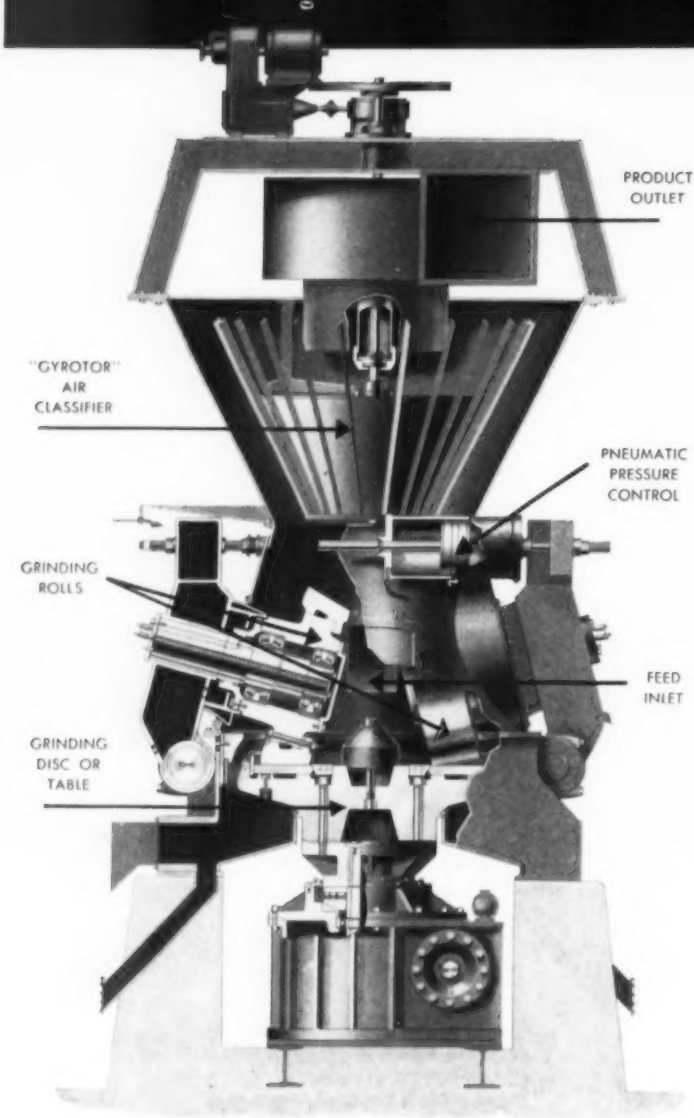
CF&I

LOOK FOR THE YELLOW TRIANGLE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

**THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln (Neb.) • Odessa (Tex.) • Oklahoma City • Phoenix • Pueblo Salt Lake City • Tulsa • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) New Orleans • New York • Philadelphia

# DISC-ROLL MILL




The Hardinge Disc-Roll Mill is applied to dry grinding of minerals such as talc, limestone, coal, phosphate rock, bauxite, clays, celestite, and gypsum. The Disc-Roll Mill incorporates pneumatic roll-loading. Since the pressure on the rolls can be released or increased at will, complete flexibility of operation results. The problem of over-loading is eliminated. Also, the Hardinge "Gyrotor" Classifier is standard equipment on the Disc-Roll Mill. This classifier provides very close control of the finished product over a wide range of sizes. Ask for Bulletin 52-8

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court held that ready-mix concrete processing machinery consisting of bins, conveyor, structural steel catwalk concrete and wire used in construction of the plant, and the lift truck, and conveyor parts were not used directly in the production of merchandise. Hence, the company must pay to the state "use" taxes on these parts.

On the other hand, this court held that steam generators are exempt from "use" tax on the ground that they were used "directly" in the production of ready-mix concrete. The court said:

"We are of the opinion that all the items here involved, with the exception of the steam generators are not used directly in the processing of ready-mix concrete, and that such generators, at least during the winter season are used directly in such processing, and their sale or use is, therefore, excepted from the tax."

### Law of Patents

A legal question was presented by an official of a concrete block manufacturing company, as follows: "Can an inventor have protection on an invention for which he fails to file an application for a patent." The answer is: Generally, no.

It is the settled doctrine of the higher courts that when an inventor perfects an invention, and fails for an unreasonable period to file his application for a patent until someone else has independently invented and patented the invention, the former inventor forfeits his rights to patent against the later inventor. See *Mower v. Crisp,* 83, O. G. 155. *Mason v. Hopburn,* 84, O. G. 147. *Davis v. Forsyth,* 87, O. G. 516. *Mower v. Duell,* Commissioner 88, O. G. 191. *Thomson v. Weston,* 94, O. G. 985. *Wright v. Lorenz,* 101, O. G. 664. *McDonald v. Edison,* 105, O. G. 973. The same rule has often been laid down by the other courts. See Robinson on Patents P. 839. See also *Berg v. Thistle,* Fed. Cas. No. 1,337. *Curtain Supply Company v. National Lock Washer Company,* 174 Fed. Rep. 47.

Another important point of law is that an inventor who is the *first* to conceive but the last to *reduce to practice* his invention is entitled to be considered the real patentee if the testimony shows that he has followed up his conception by due

## *When it's unhandy to position*

## Hard-Face it where it Sits!

*Low Cost* **STOODY 1030** — *the rod that simplifies hard-facing jobs* — **in field or shop!**

**POSITION WELDING** — Here's a new Stoody Hard-Facing Rod for use on big equipment — parts that can't be positioned readily for welding! Stoody 1030 is easy to weld either vertical or downhand. The arc is smooth and stable with little smoke and low spatter. Runs AC and DC. Welds to carbon steel, manganese steel and weldable cast iron.

**LESS WORK** — With Stoody 1030 there's no slag to chip, deposits are bright and clean — ready for multiple passes and high buildups, if required.

**HIGH WEAR RESISTANCE** — Users who know hard-facing metals know that high alloy content is the key to more wear resistance. *With 11.3% chrome, Stoody 1030 surpasses everything in its price class!* This means longer wear per hard-facing dollar!

For high deposition rates, *more actual pounds laid down per hour* ... for a *long lasting alloy* at a *low price* try Stoody 1030! It's available from any Stoody Dealer. Check the Yellow Pages of your phone book or write direct to the company. Literature available.

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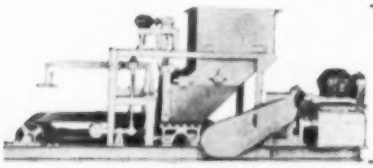

**OVER 1500**
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# SCHAFFER POIDOMETERS

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A new and promising season is coming up—and as usual, SCHAFFER Poidometers will help to insure record operating efficiency in hundreds of plants throughout the world.
Wherever bulk materials are handled, these outstanding units are a guarantee of high product uniformity, maximum output, and economical, sustained service.
They're unmatched for every scaling requirement —weighing, blending, feeding, mixing, recording, proportioning.
Poidometers are available with total weight recorders, and remote control devices for showing and changing feed rate.

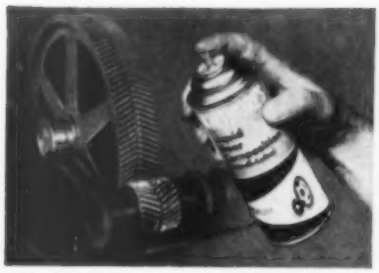
*Write for CATALOG No. 5*

**SCHAFFER POIDOMETER CO.,** 2828 SMALLMAN ST., PITTSBURGH 22, PA.

*Enter 192-A on card, page 165*

# TRIAL SAMPLES

## *Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!*



**HANDI-LUBE LIQUID GEAR COMPOSITION**

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal —no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

**WIRE ROPE SPRAY LUBRICANT**

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300% —special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

**65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:**
- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893
**THE WHITMORE MANUFACTURING CO.**
LUBRICATING ENGINEERS
CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

*Enter 192-B on card, page 165*


diligence by filing an application for a patent within 6 months to one year. See *Cooke v. Jones and Taylor,* 116 O. G. 1181.

Still another important point is: An inventor is entitled to a reasonable time to perfect his invention before applying for a patent. See *Mead v. Davis and Varney,* 36, O. G. 2001.

Therefore, in view of the above mentioned higher court decisions, an inventor should promptly and without any delay file in the United States Patent Office his application for a patent. On the other hand, if he has not perfected his invention he has an indefinite period of time to perfect it, before filing an application for a patent.

### Real Estate Broker Cannot Testify

Last month a higher court rendered an important decision which answers a question often asked by owners of quarries, sand and gravel plants, and other producers of nonmetallic products.

For example, in *L. Lime Corporation v. Massachusetts Turnpike Authority,* 149 N. E. (2d) 905, the testimony showed facts, as follows: The L. Lime Corporation owned a limestone quarry and a plant manufacturing lime products. The Massachusetts Turnpike Authority condemned and appropriated certain land owned by the L. Lime Corporation for use in the construction of a toll express motor vehicle highway. At the time this land was appropriated the corporation had been operating its business for about fifty years and it was operating at full or near full capacity. The Massachusetts Turnpike Authority offered to pay the corporation a relatively small amount for the appropriated land and the corporation filed suit to compel the turnpike authority to pay what its officials believed to be the fair value of the land.

During the trial the corporation proved that two to four primary blasts occur annually to loosen limestone from the face of the quarry and displace approximately 40,000 tons; these primary blastings result in the dislodging of pieces of stone of various sizes "from dust to rocks half the height of the court room and almost as square." These frag-




*Enter 193 on card, page 165* →

*Rear-Dump "Eucs" have payload capacities of 10 to 50 tons—are powered by engines of 128 to 670 total h.p. . . . have loaded speeds up to 41 mph.*

# For Lower Hauling Costs in Mines and Quarries Check Euclid Performance

Open pit mine and quarries the world over have standardized on Euclid equipment for moving earth, rock, coal and ore on tough off-the-highway hauls. They know from years of experience on their own operations that "Eucs" get more work done every shift — that production cost is lower than with other types and makes of equipment.

Euclid has a complete range of sizes and models to fit every job requirement — rear dump and bottom dump haulers, self-powered scrapers and the world's most powerful crawler tractor. Your Euclid dealer will be glad to provide a production-cost estimate on your present or planned operations — be sure to see him before you replace or add to your equipment fleet — and have him show you why Euclids are your best investment.

**EUCLID** Division of General Motors Corporation
Cleveland 17, Ohio

*Bottom-Dumps carry 13, 17 and 25 cu. yds. struck . . . special coal hauler trailers have capacities of 25, 40 and 51 tons. Full length, unobstructed door opening make these "Eucs" ideal for dumping free-flowing material into drive-over hoppers.*

*The TC-12 Crawler has 2 engines and independent track drive . . . 402 net h.p. . . . full power shift . . . top speed of 7.8 mph. This "Euc" tractor has unequalled work-ability for heavy dozing, ripping and similar work in mines and quarries.*

*This "Twin" Scraper has 2 engines with Torqmatic Drive . . . all wheel drive permits self-loading . . . struck capacity is 24 cu. yds. There are six other Euclid Scrapers, overhung engine and six wheel types, with struck capacities ranging from 7 to 24 — 9 to 32 yds. heaped.*

# EUCLID EQUIPMENT

*FOR MOVING EARTH, ROCK, COAL AND ORE*

ments are then reduced in size by secondary blastings so as to permit them to pass through the crusher. These secondary blasts number 15,000 to 20,000 a year and five percent will throw stones for a distance of about 800 to 850 feet and are likely to reach the new highway. There was also evidence that "the fly rock" is uncontrollable and results in making unavailable a large area of the corporation's land by its inability to conduct blasting operations within 800 feet of the new turnpike.

The corporation introduced before the court two expert real estate brokers and appraisers to prove that the amount offered by the Massachusetts Turnpike Authority was considerably less than the actual value of the property. These appraisers testified that they had made numerous appraisals of various types of property and had served on many real estate boards dealing with appraisals. Also, they testified that they had never sold, appraised or operated a limestone plant or quarry.

The higher court refused to allow these witnesses to testify for the L. Lime Corporation, and said:

"Ordinarily a real estate dealer or appraiser may testify as to the value of property, whether or not he has seen it or sold land in the neighborhood, if he possesses sufficient experience and knowledge of values of other similar real estate in the particular locality. But it is not sufficient that a real estate dealer or appraiser may have a general knowledge of real estate values. He should possess knowledge and experience regarding the particular type of property involved which will enable him to form an intelligent and fairly accurate estimate of the diminution in actual market value occasioned by the takings."

### Cannot Avoid U. S. Laws

All higher courts agree that valid United States laws and statutes cannot be avoided by mere technicalities. Obviously this rule of law is applicable to tax laws.

For example, sometime ago an official of a quarry company asked whether or not he can avoid paying wages specified by the Fair Labor Standards Act by having his employees organize a business which provides "contract services" for the employer. A higher Federal court case clearly answers this legal question in the negative. This court held that an employer cannot avoid paying minimum wages specified by the Fair Labor Standards Act merely by making written contracts with an employee who assumes to be the proprietor of a business which serves the employer.

For illustration, in *Mitchell v. Strickland Company*, 228 Fed. (2d) 124, the testimony showed these facts: A man named Baccus signed a written contract with the Strickland Company to act as the Robert Baccus Protective Service. The letter agreed to furnish services for the Strickland Company. The testimony showed that Baccus had no "real protective service" with other companies.

In subsequent litigation, the higher court held that Baccus is an employee and must be paid minimum wages specified by the Fair Labor Standards Act, saying:

"A watching and protection service may constitute an independent contract but we hold this to be employment and as such in violation of the Act. Was Baccus actually an employee despite the title and garb of independent contractor? We think an examination of undisputed evidence demonstrates that except for the label he was an employee in a very real sense."

---

At a meeting of the board of directors of the Michigan Chemical Corporation, Saint Louis, Mich., Theodore Marvin, president, reported on the construction progress of the firm's new seawater magnesia plant at Port St. Joe, Fla. He also announced the election of Fred A. DeMaestri, vice-president of operations, to the board of directors.

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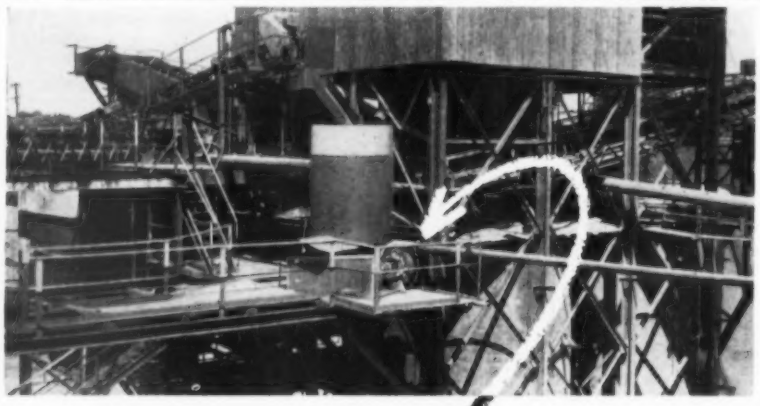
The Milwaukee plant of the Huron Portland Cement Company has received an award for operating more than 2,000 work days without a disabling injury.

Nagle® SAND and GRAVEL PUMPS for TRUE ECONOMY

MANY leading aggregate producers have found that Nagle Sand and Gravel Pumps are truly most economical in the long run, because they outlast ordinary pumps by far. Nagle horizontal and vertical shaft centrifugal pumps are designed specifically for abusive jobs such as sand and gravel handling. A Nagle 6" Type "KR" Pump is shown on the job at Cayuga, Ind., plant of Material Service Co., Chicago, which uses Nagles at various plants. Send for Catalog 5206.

NAGLE PUMPS

NAGLE PUMPS, INC.
1257 CENTER AVE., CHICAGO HEIGHTS, ILL.

PUMPS FOR ABRASIVE AND CORROSIVE APPLICATIONS

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## FOR A SUPERIOR AGRICULTURAL LIMESTONE PRODUCT ... IN ONE LOW COST OPERATION

Whether the mesh is 10 or 20, Bradley Hercules Mills reduce limestone to a uniform fineness in a single operation without additional screening . . . . . produce finished material containing a large percentage of 60, 100 and 200 mesh. And Bradley Hercules Mills also eliminate manual operation through an electrical feed control. Their rugged construction . . . dustless operation . . . easy accessibility to grinding parts keep maintenance costs at an absolute minimum . . . provide maximum service, 7 days a week. In sizes to meet any plant's requirements for a superior grade of agricultural limestone . . . at moderate cost.

*For complete information, write for Catalog No. 63*

BRADLEY PULVERIZER CO.
*superior grinding equipment since 1891*

LONDON ALLENTOWN, PA. BOSTON

**LUBRIPLATE**
**No. 630-2**
*Multi-Purpose Grease*

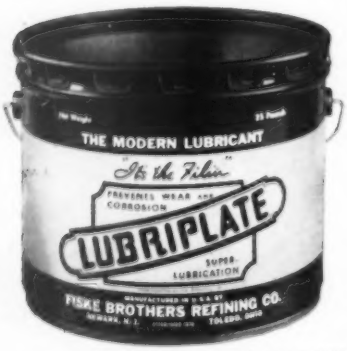
ALSO PACKED IN

**CONVENIENT GREASE GUN CARTRIDGES**

Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

**REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE**

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.

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# Manufacturers' News

Crown Zellerbach Corporation, San Francisco, Calif., has appointed NEIL MCCLARNAN as northern regional sales manager, Multiwall Bag Sales Division. Headquartered in Chicago, Mr. McClarnan will direct Crown multiwall sales staffs in Minneapolis, Columbus, St. Louis, Kansas City, and New York.

N. McClarnan

F. Bostock

A veteran of 20 years' sales experience in the multiwall bag field of the Midwest and East, Mr. McClarnan replaces FRED BOSTOCK, who has been transferred to company headquarters in San Francisco as western regional sales manager with responsibility for the co-ordination of multiwall sales offices in Seattle, Portland, Los Angeles, Salt Lake City, and Denver.

S. WILLIAM RILEY, formerly chief project engineer, has been appointed chief engineer for the Quaker Rubber Division, H. K. Porter Company, Inc. He will be responsible for engineering at the Philadelphia plant.

E. LAURENCE GAY has been elected secretary-treasurer of Hewitt-Robins, Inc., Stamford, Conn. He was formerly associated with the law firm of Debevoise, Plimpton & McLean, New York, specializing in corporation finance work, and from 1952 to 1953 he was a member of the legal staff of the United States High Commissioner to Germany.

Square Deal Machinery Company of Orlando, Jacksonville, and Miami, Fla., has been appointed a dealer for the Euclid Division, General Motors Corporation, Cleveland, Ohio. Territory assigned to Square Deal includes the entire state of Florida except the counties west of the Apalachicola River.

After 33 years of leadership in the air filter and dust control industry, JOHN HELLSTROM, vice-president of the American Air Filter Company, Louisville, Ky., retired November 1. He was director of AAF's Products and Marketing Division, and manager of the American Air Division.

Hellstrom was president of the Midwest Air Filter Company at the time of its merger in 1926 with three other firms to form the American Air Filter Co. He later became vice-president in charge of dust control products.


**GILSON**

**TESTING SCREEN**

A proven profit maker. Controls and guarantees your product. Fast, accurate, trouble-free.

For sizing test samples of crushed stone, sand and gravel, slag and similar materials in a size range from 4-in. to 200-mesh.

**GILSON TESTING SCREEN**
with motor, dustpan tray and 5 coarse series screen trays..$500 FOB Malinta, Ohio
Shipping Weight.....500 lbs.
Write for complete GILSON catalog

**SAMPLE SPLITTER**

Reduces large samples for convenient testing. Adjusts for all materials, sand to heavy aggregate. Simple to use. Heavy welded steel construction.

**SAMPLE SPLITTER**
complete with two material pans and bag-loading chute..$125 FOB Malinta, Ohio
Shipping Weight, crated.....195 lbs.

**GILSON SCREEN CO.**
MALINTA, OHIO

Enter 196-B on card, page 165

# THE BIG E ... with Advanced Design and Engineering

The EIMCO 105 TRACTOR introduces a new concept in rugged, efficient and practical tractor design and engineering.

**Look at these Eimco features:**

- Up - front operator position for unequalled visibility
- Torque - Converter transmission perfectly matched to engine
- Independent Track Drive for spin turns in own length
- Center - mounted power unit for better traction and balance
- Track Oscillation for easy operating mobility on all surfaces
- One piece cast alloy-steel track rollers, liquid flame hardened
- Instant reversal with one control lever for each track
- Many others we'll be glad to demonstrate and explain

Contact the nearest sales office of The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah.

**THE EIMCO CORPORATION • SALT LAKE CITY, UTAH**

EXPORT OFFICE, 51-52 SOUTH STREET, NEW YORK, N. Y.

BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

B-378

# These Hook Strips Prolong Screen Life!

## STARSTEEL
HEAVY DUTY **SPACE SCREENS**

When vibrating screen tension is not kept tight and uniform over the entire surface, screens distort, buckle and break long before they should. To prevent this, STARSTEEL screen mesh is first stress-relieved, leveled flat and sheared perfectly square. Only then are hook strips precision-fitted and applied on machines built specially for that purpose.

These absolutely true, straight hook strips fit machine frames better, install easier, and allow the screen to be maintained under extremely tight tension. This, plus the tougher wear-resistant specially made wire in STARSTEEL Screens, greatly lengthens their life—in some cases more than double. Get twice your money's worth—buy STARSTEEL!

*Most weaves and sizes ready to ship.* **Ask for catalog.**

Star will produce screens or cloth from stainless or other steel alloys, Monel, brass, bronze, copper, aluminum or any metal that can be drawn into wire. Inquiries invited.

**STAR WIRE SCREEN & IRON WORKS, INC.**
2515 San Fernando Road • Los Angeles 65, Calif.

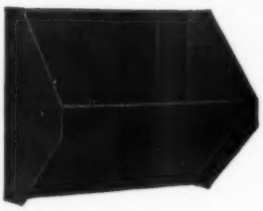
*Subsidiary of Ludlow-Saylor Wire Cloth Company, St. Louis, Mo.*

*Enter 198-A on card, page 165*

# ELEVATING and CONVEYING equipment by STANDARD METAL

***Strong***
***Long-lasting***
***Efficient***
***Economical***

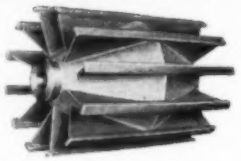
## STANDARD METAL'S CONTINUOUS ELEVATOR BUCKET STYLE No. 2



**Provides outstanding service and economy under severe operating conditions. It resists wear—assures longer bucket life. This style of bucket is just one of the complete line of low-cost, rugged steel buckets manufactured by Standard Metal. Available in Salem, Style "A" and other continuous style buckets.**

●●●●●

## STANDARD METAL'S WING-TYPE SELF-CLEANING PULLEY



**These pulleys provide six cost-cutting advantages — all-steel welded construction . . . lower cost . . . less weight . . . greater strength . . . greater resistance to breaking . . . longer life.**

●●●●●

## STANDARD METAL'S BIN GATES

**Shown is the all-steel gear-operated Bin Gate for faster, easier, lower cost material handling. Other types of Bin Gates by Standard Metal also available.**

●●●●●

**Write today for complete details and quotations on your needs in elevating and conveying equipment. We also will send you the catalog showing the complete Standard line.**

2546

The Standard Metal Mfg. Co. SINCE 1921

**STANDARD METAL MFG. CO.**
110 CENTER ST. MALINTA, OHIO

*Enter 198-B on card, page 165*

At a recent meeting, the board of directors of the Bucyrus-Erie Company, South Milwaukee, Wis., elected ROBERT G. ALLEN as president in charge of all operations, effective December 16. He succeeds WILLIAM L. LITLE, who will continue as chairman of the board and senior officer.

Mr. Allen joined Bucyrus-Erie in 1957 as vice-president and later in that year became executive vice-president. Mr. Litle was elected vice-president in 1943, president in 1952, and chairman and chief executive officer in 1957.

R. G. Allen

W. F. Hall

WILLARD F. HALL has been named assistant sales manager of International Harvester's Construction Equipment Division.

Mr. Hall, who has been with International Harvester since 1939, was formerly central region sales manager of the division.

The Hoosier Bearing Company, Indianapolis, Ind., has been appointed a distributor of Formsprag clutches, according to an announcement from the Formsprag Company, Warren, Mich. The firm's territory includes the Indianapolis market area and the city of Fort Wayne.

G. E. BRIEN of the Bailey Meter Company, Cleveland, Ohio, has been appointed resident engineer in New Haven, Conn., a subdivision of the New York District. For the past several years his territory has included the state of Connecticut.

On the New York staff since 1934, Mr. Brien worked out of the Boston office in the early 1930's. He joined Bailey Meter in 1930 as a cadet engineer.

Appointment of LEO E. ENGLESON as manager of the Rochester, N. Y., district has been announced by Allis-Chalmers Industries Group.

A special representative in Allis-Chalmers northeast region since 1956, Mr. Engleson joined Allis-Chalmers in 1950. He served as a sales representative in the company's Boston district from 1952 to 1956.

ROBERT G. BURNS has retired from active representation of Allis-Chalmers in the Rochester area after 30 years of continuous service. In continuing his other sales activities in Rochester, Mr. Burns will act as consultant to the Allis-Chalmers Rochester district office.

Promotion of ARTHUR E. WIGG to manager of truck tire sales for the San Francisco division of The General Tire & Rubber Company, Akron, Ohio, has been announced.

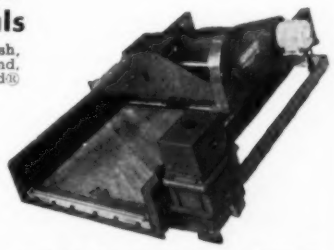
Formerly the Redding, Calif., territory manager, Mr. Wigg replaces WILLIAM M. BOYD, who was transferred to General's manufacturers sales division.


**FIRST in the Screening of Difficult, Damp Materials**

For the screening of very difficult, fine mesh, damp materials such as ag-lime or silica sand, there is nothing to match the Leahy® No-Blind® Vibrating Screen.

- **Differential Vibration clears the mesh of wedging particles.**
- **FlexElex® heating keeps mesh dry and wide open.**
- **Straight runs of oversize bus bars completely eliminate bothersome flexible transformer connectors.**

SEND FOR BULLETIN 16-EH



*Made by the Original Deister Company Established 1906*

**THE DEISTER CONCENTRATOR COMPANY**
911 Glasgow Avenue, Fort Wayne, Indiana

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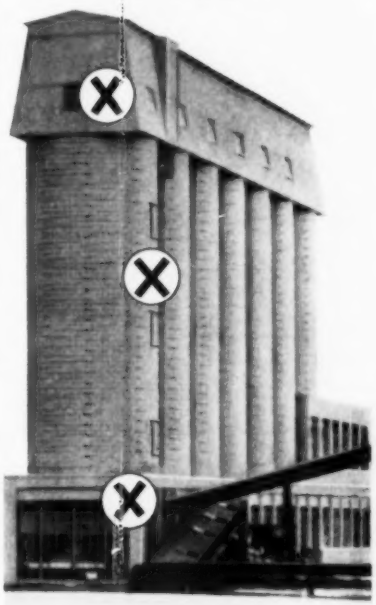
**X MARKS THE CRITICAL SPOTS!**



**It takes more than muscles to build a storage bin**

Before the physical work of building a bin begins, we must know the problems involved at the *Three Critical Points.*

- **X** What is the loading problem?
- **X** What are the characteristics of the material to be stored . . . and its "flowability"?
- **X** What is the volume and rate of discharge?

When planning your next storage bin, may we sit in on the very early stages of planning?

**NEFF & FRY COMPANY**
**306 Elm St., Camden, Ohio**

N&F

*You can always spot a Neff & Fry Bin by the shape of the stave!*

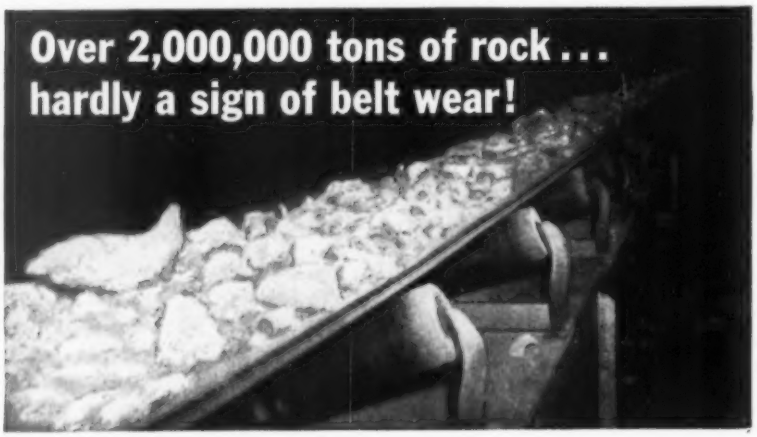
*Enter 199-B on card, page 165*

The Yale & Towne Manufacturing Company, New York, N. Y., has appointed three new distributors for its Trojan tractor shovel line.

The Intermountain Equipment Company, Pocatello, Idaho, is the Trojan distributor in Idaho. The Capitol Tractor & Equipment, Inc., Morton, Ill., is the Trojan distributor for central Illinois. The Contractors Equipment Company, Inc., Lexington, Ky., is distributor in Kentucky.

EDWARD K. LEFREN, assistant director of operations for Hercules Powder Company's Explosives Department since 1957, has been appointed to a newly-created post, manager of technical services for Hercules Engineering Department.

The Gates Rubber Company has begun construction of a $9,000,000 manufacturing plant in Nashville, Tenn.


That's the story behind the New York Rubber Stonore Nyrex conveyor belt, in regular, daily use by a large stone company. In this crushed stone plant, this heavy-duty belt carries stone from the primary crusher, located under the floor of the pit, over a belt distance of 455 feet at a 19° angle.

A belt *has* to be good to stand the tension required here *and* hold up under the abrasive effects of the crushed stone at the same time! Yet, this is the kind of service that is expected – and achieved regularly – with conveyor belting manufactured by New York Rubber Corp.

Take Stonore, for example. Highest in quality, mildew-proof, and built for the most severe service, it successfully handles heavy ores, trap rock, crushed stone, coarse broken glass, slag, cement clinkers, and direct feed from digging and mining machinery. It is also available as a special mucker belt.

If you want the service that this belt provides — or need any other type conveyor belt — it will pay you to consult New York Rubber. Drop us a line — there's no obligation. Address: Department PQ-4.

NY RUBBER

NEW YORK RUBBER
CORPORATION
Established 1851
100 PARK AVENUE • NEW YORK 17, NEW YORK

*Enter 200 on card, page 165*

H. A. Myers

E. G. Oman

H. A. MYERS has been appointed operations manager of the Denver office of the Western Machinery Company, San Francisco, Calif. Formerly manager of the company's Spokane office. Mr. Myers will now be responsible for sales in Colorado. He will also administer the distribution of a newly-enlarged line of aggregate processing equipment made by WEMCO, Western Machinery's manufacturing division.

Replacing Mr. Myers as manager of the Spokane office is EDWARD G. OMAN, who has been with the company since 1953. Before joining Western Machinery Company, he was associated with the Timken Roller Bearing Company, Star Machinery Company, and the Pend Oreille Mines of Metaline Falls, Wash.

The Wire Rope Division of Jones & Laughlin Steel Corporation, Pittsburgh, Pa., has opened a new warehouse in Atlanta, Ga. The new warehouse is a consolidation of the J&L Wire Rope Division's warehouses in Savannah, Ga., and Birmingham, Ala., and will serve customers in Georgia, Alabama, South Carolina, Florida, and part of Tennessee.

ELLIOT K. LUDINGTON, 82, chairman of the board of directors of the Chase Bag Company, New York, N. Y., died of a heart attack on October 8 at St. Clare's Hospital in New York.

From 1910 to 1934, during his term as president of Chase Bag, Mr. Ludington was responsible for expansion of the company from a two-plant organization to a nation-wide network of 13 factories and a paper mill. As chairman of the board he continued his keen interest in all company affairs, particularly in the development of new products.

# Westchester Rock, Inc., reports faster drilling, fewer bit changes in granite gneiss with TIMKEN® carbide insert bits

THE new Cross Westchester Expressway cuts through hard, abrasive granite gneiss. Drilling depths often reach 30 feet. Yet good speed and minimum bit changes are reported by Westchester Rock, Inc., of White Plains, N.Y. They're holding cost per foot-of-hole down with Timken® carbide insert bits.

You'll make good time in tough rock with these bits, too. But carbide insert bits may not be your best bet for every job. In ordinary ground, where you can drill out full increments of steel and do proper and controlled bit reconditioning, you'll get your lowest cost per foot-of-hole with Timken all steel multi-use bits.

All steel multi-use or carbide insert, Timken bits save time for your drillers because they are interchangeable in the same thread series. When drilling conditions change, you can change bits without the trouble of changing drill steels. And Timken bits last longer because their special shoulder union protects threads against drilling impacts.

To assure the quality of Timken bits, we make them from our own electric furnace, Timken fine alloy steel. No other American bit manufacturer takes this extra quality control step. Let us recommend the right bit for your next job. Just call or write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, O. Cable: "TIMROSCO".

Timken threaded all steel multi-use rock bit

Timken threaded carbide insert rock bit

**TIMKEN®** *your best bet for the best bit for every job*

CHARLES M. PERKINS, head of the Research Department at Fuller Manufacturing Company, Kalamazoo, Mich., has been promoted to chief engineer. Mr. Perkins, who joined Fuller in 1948, replaces Thomas Backus, who retired November 15.

C. M. Perkins

E. H. Nelson

Appointment of EUGENE H. NELSON as a district representative has been announced by officials of the Koehring Division, Milwaukee, Wis. Mr. Nelson was formerly a district representative for Koehring Company's Parsons Division at Newton, Iowa.

Mr. Nelson's territory includes Louisiana, Texas, Oklahoma and New Mexico.

Market research and product development operations of International Paper Company's Bagpak Division have been shifted from Camden, Ark., to the company's New York headquarters.

W. L. SHOEMAKER, with International Paper since 1951, has been named manager of these activities. In his new post, which will be in the New York office, Mr. Shoemaker will supervise Bagpak's sales development engineers throughout the nation.

C. E. JONES was appointed manager of engine sales of the Construction Equipment Division, International Harvester Company, Chicago, Ill.

A member of the firm since 1936, Mr. Jones has held construction equipment posts in Quincy and Aurora, Ill., and in the Chicago general office. Since 1952, he has worked out of the division's Melrose Park, Ill., headquarters, his last assignment being divisional supervisor of sales engineering and sales development.

J. D. Williams

H. F. Hodgkins Sr.

JOHN D. WILLIAMS has been elected president of the Lipe-Rollway Corporation and the Rollway Bearing Company, Inc., Syracuse, N. Y. Mr. Williams succeeds H. FOLLETT HODGKINS SR., who becomes chairman of the board.

Other management changes include the appointment of Robert M. Zimmerman to the post of vice-president, Lipe-Rollway Corporation; and the promotion of H. Follett Hodgkins Jr. to vice-president of Rollway Bearing Company, Inc., a wholly-owned subsidiary.

Mr. Williams has served the company in various capacities during the last 28 years. In 1953 he became director and vice-president and general manager of Rollway.

The senior Mr. Hodgkins, who has been with Lipe-Rollway for 32 years, was formerly president of both Lipe-Rollway Corporation and Rollway Bearing Company, Inc.

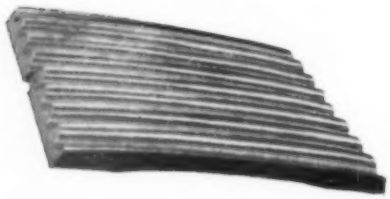
Mr. Zimmerman, who joined Lipe in 1956, will continue in his capacity as general manager.

Seven 20-minute color sound-slide films produced by the Construction Machinery Division of the Clark Equipment Company teach the care and maintenance of *Michigan* tractor shovels.

Keyed to the needs of the semi-skilled mechanic, this first series of service training films covers Service and Maintenance of the Torque Converter, Service and Maintenance of the Power-Shift Transmission, Service and Maintenance of the Engine, Preventive Maintenance, Trouble Shooting the Transmission and Torque Converter, Tractor Shovel Hydraulics, and The Steering Drive Axle.

Information may be obtained from the Clark Equipment Company, Construction Machinery Division, Pipestone Rd., Benton Harbor, Mich.


Columbia MANGANESE STEEL CRUSHER PARTS



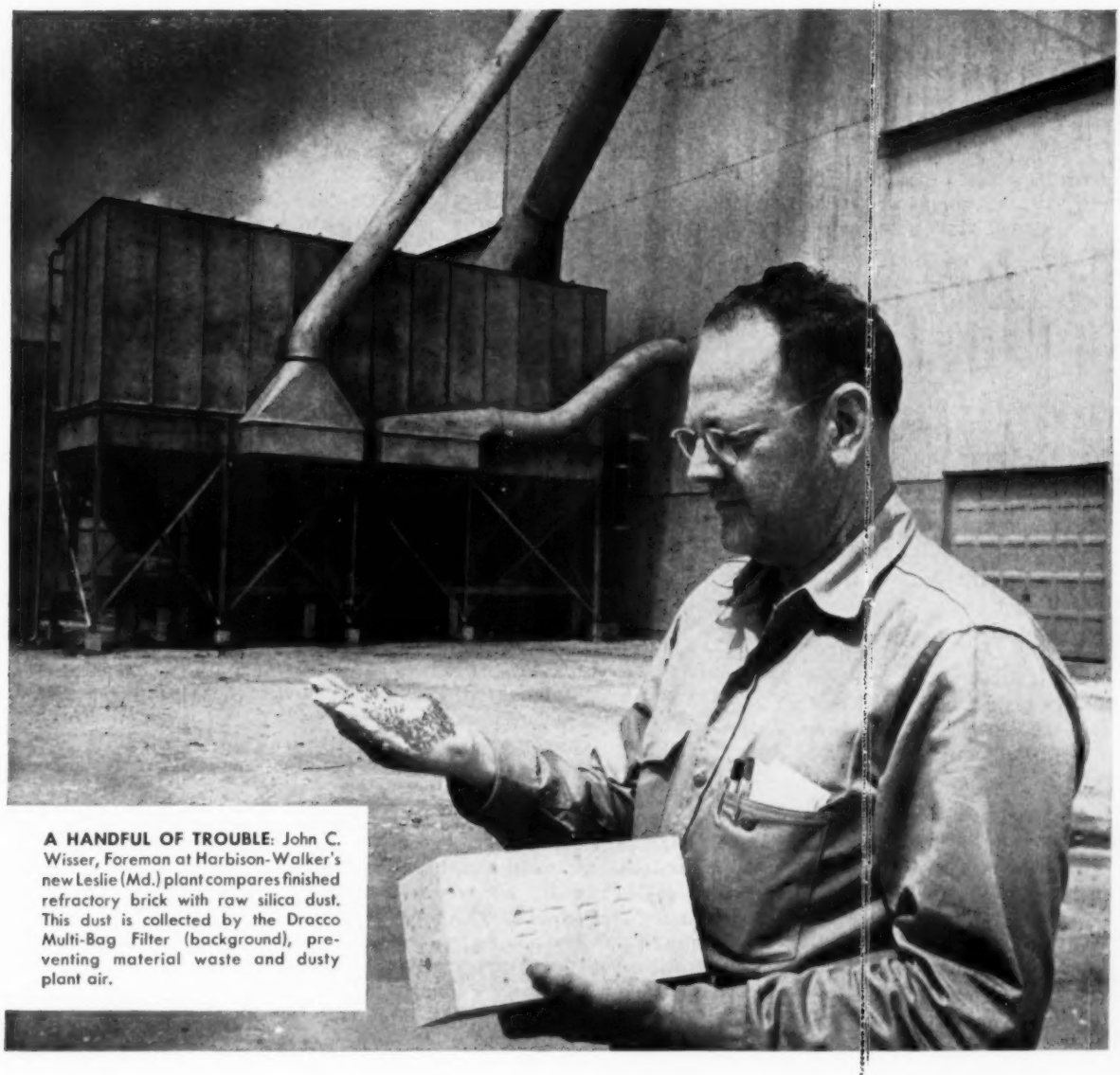
- Complete production of parts for all makes and models of jaw, roll and cone crushers. Interchangeable with all original parts.
- Large stock of parts available for immediate shipment.
- Proven service and quality for over 50 years.

Columbia

MANGANESE CRUSHER JAWS • ROLL SHELLS
GYRATORY PARTS • SHOVEL PADS • BUCKET TEETH

COLUMBIA STEEL CASTING CO., Inc.
933 N.W. Johnson St., Portland 9, Oregon, U.S.A.

Enter 202 on card, page 165



**A HANDFUL OF TROUBLE:** John C. Wisser, Foreman at Harbison-Walker's new Leslie (Md.) plant compares finished refractory brick with raw silica dust. This dust is collected by the Dracco Multi-Bag Filter (background), preventing material waste and dusty plant air.

# Dracco dust control keeps new plants new

There's something exciting about a new plant. It symbolizes the success and progress of your company.

Uncontrolled dust can spoil the picture before you know it: maintenance and cleaning costs rise—machines become worn—efficiency is affected by dirty plant air—valuable material is wasted.

The time to solve dust problems is before the plant is built. Dracco engineers working hand-in-hand with your plant engineering staff can plan a dust control system which will prevent dust from polluting plant air or the atmosphere and keep employees and machinery working like new.

Harbison-Walker Refractories Company is typical of forward-thinking companies who pre-plan for production efficiency. Their new ultra-modern plant in Leslie, Maryland, uses Dracco Dust Control to prevent spread of dust from grinders and belt conveyors.

If your company is planning a new plant, or an expansion of your existing facilities, it will pay to look ahead with Dracco.

**DRACCO CORPORATION**
**4050 East 116th Street · Cleveland 5, Ohio**

*Complete 40-page catalog on Dracco Dust Control Equipment contains detailed data and valuable reference material. Write for Bulletin 800.*

**DRACCO** *airstream* conveyors
dust control equipment

FULLER COMPANY GENERAL MARCH

Purchase of the Fuller Manufacturing Company, Kalamazoo, Mich., by the Eaton Manufacturing Company, Cleveland, Ohio, has been announced.

Worthington Corporation, Harrison, N. J., has appointed P-D Service Syracuse Corporation, East Syracuse, N. Y., as distributor in New York. Equipment handled by the firm includes rotary compressors, mobile drills, and plant and contractors' pumps.

After 32 years of continuous service, JOHN B. JENKINS has retired from Twin Disc Clutch Company, Racine, Wis.

Mr. Jenkins first came to Twin Disc as a sales engineer in 1926. In 1936 he was sent to Tulsa, Okla., to open the first Twin Disc factory branch, and subsequently opened other branches in Dallas and St. Louis.

He later served as manager of the Hydraulic Division in Rockford, Ill., and since 1947 has been in charge of the Detroit office.

WALTER W. BLACK, general service manager, International Harvester Company, Construction Equipment Division, Melrose Park, Ill., has been appointed chairman of the newly organized CIMA Service Management Council by Boyd S. Oberlink, CIMA president.

CIMA, the Construction Industry Manufacturers Association, with headquarters in Chicago, represents 244 companies which supply equipment, supplies, materials, components, or publications to the construction industry.

Mr. Black became associated with International Harvester in 1928 as a field serviceman and advanced through the service end of the business to his present position of general service manager.

N. K. HELDING has been appointed assistant construction machinery sales manager of the Allis-Chalmers' Syracuse, N. Y., branch. He comes to Syracuse from Columbus, where he held the same position. Mr. Helding joined the company in 1954 as Construction Machinery salesman in Omaha.

On September 28 the Shafer Bearing Division of the Chain Belt Company, Milwaukee, Wis., conducted an open house at its plant in Downers Grove, Ill. Visitors to the factory viewed the most highly developed assembly-flow patterns and hundreds of newest machines which triple the output capacity of the former Shafer plant. Displays throughout the plant showed the entire range of Shafer roller bearings and other Chain Belt products.

VICTOR F. STINE, 65, president of the Pangborn Corporation, Hagerstown, Md., died October 29th.

A native of Hagerstown, Mr. Stine started his business career with Pangborn in 1912. Throughout the years he has served his company in sales and many administrative capacities. He became president of the company two years ago.

Construction of a $500,000 rubber products manufacturing plant in Mexico was announced recently by Charles C. Gates Jr., vice-president of the Gates Rubber Company, Denver, Colo. The new factory will produce a variety of rubber products, including a complete line of V-belts for the automotive and industrial markets in Mexico. Production is scheduled to start by July, 1959.

Three major personnel changes within the Gardner-Denver Company, Quincy, Ill., were recently announced.

CHARLES M. GEORGE, secretary, has been elected vice-president and general manager for operations of the two plants at the firm's headquarters in Quincy.

AUBREY H. JONES, vice-president and director of the export division, has been elected president of Gardner-Denver International, C. A., a new subsidiary.

KENNETH J. MCDANIEL, director of personnel, has been elected secretary.

West Virginia Pulp and Paper Company, New Orleans, La., has named several men to new positions in the Southern Region of its Multiwall Bag Division.

In the Atlanta District, HENRY M. HOWE, formerly a sales representative in that area, was promoted to district sales manager. SAMUEL O. WILKES and ERNEST E. LOCKETT were appointed representatives under Mr. Howe.

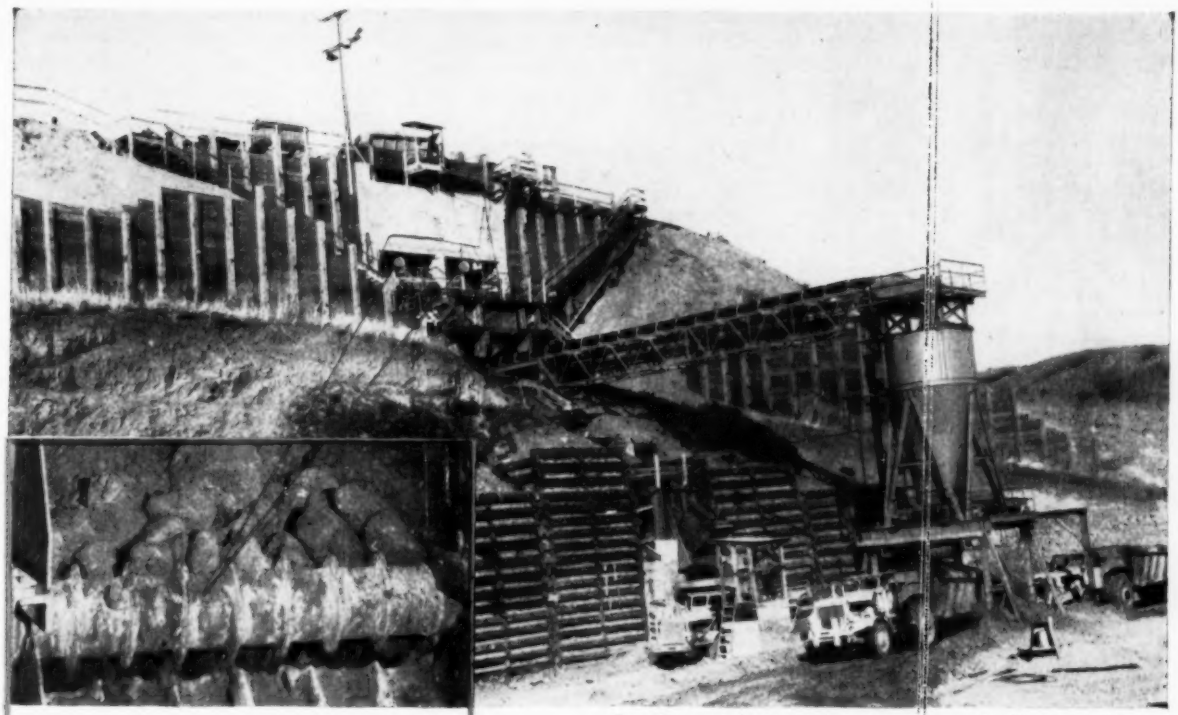
The Dallas District sales staff have been increased by the appointment of EUGENE O. WILSON as a sales representative.

For the Torrance, Calif., District, the company has named FRANK L. SMITH district sales manager. Mr. Smith was formerly district sales manager for the southeastern part of the country.

In addition to these appointments, a Technical Service Staff has been named for the New Orleans and Los Angeles areas.

EUGENE C. BRISTOL has been appointed technical service representative for the New Orleans, Dallas, and Atlanta districts, and ROBERT J. GIGLER has been named technical service representative for the West Coast area.

Two new regional managers have been appointed by American Air Filter Company, Inc., Louisville, Ky. JOHN J. WILLIS has been named to the newly-created post of Midwest Regional manager. A. B. ULLRICH JR. has been selected Southern Regional manager, succeeding Morris G. Munson, who has retired.



One of two Wobbler Feeders discharging oversize as fines pass through bar spacings.

Overall view of classifying plant at Casitas Dam. Wobblers are behind concrete facing. Under 3" material comes on belt to storage hopper. Over 3" is chuted to loading bucket.

# The Universal Wobbler Feeder solved a classifying problem—saved about $30,000

## for Winston Bros. Company at the Casitas Dam site, Oak View, Calif.

The fill requirements on the Casitas Dam project call for 3,207,000 cu. yds. of minus 3" material and 741,000 cu. yds. of plus 3" material. The material comes from a sandstone gravel pit containing 17% plus 3" and 83% minus 3" material. One of the more serious problems is damp fill, caused by the 12" to 14" of rainfall in winter months.

This problem of classifying was solved, even in damp fill, by installing two Universal Wobbler Feeders. Elliptical shaped bars, set in alternate vertical and horizontal positions, form the feeder beds. Loads of rock and gravel are dumped down a chute directly onto the feeders. As the bars rotate, the loads are set in motion. The 3" and under material drops through bar spacings onto a single conveyor, which carries it to a storage hopper. The plus 3" material is fed off the ends of the Wobblers down a steel-lined chute to a loading bucket.

The Wobbler installation saved about $30,000 compared to the cost of a shaker system. With a shaker system, Winston Bros. would have had to construct a complete concrete structure to combat vibration. It would also have been necessary to build a system twice as high as the present Wobbler assembly. Self-cleaning Wobbler Feeders eliminate operation shut-downs required by shaker systems. And the Wobblers operate on half the horsepower shakers would take.

If damp earth, mud or clay is one of your problems, the Universal Wobbler could very well be the answer you've been looking for.

But let us tell you specifically what the Wobbler can do for you. Write us a letter. Tell us the material you're working with, the percentage of fines in the feed and the production per hour you want. We'll be glad to recommend the right Universal Wobbler Feeder for your operation.

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

**UNIVERSAL ENGINEERING CORPORATION**

619 C Avenue, N.W., Cedar Rapids, Iowa

Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois

L. A. Rager

K. W. Chriswell

Several promotions within the Merchandising Division of the LeTourneau-Westinghouse Company, Peoria, Ill., have been announced by L. A. DePolis, vice-president in charge of the division.

LLOYD A. RAGER, advertising manager of LeTourneau-Westinghouse for the last four years, has been named manager of the firm's new Motor Grader Sales Department. Succeeding Mr. Rager is KENNETH W. CHRISWELL, formerly asasistant advertising manager.

E. L. CLINE, central area sales manager for the firm since 1955, will assist Mr. Rager. Mr. Cline is succeeded by ROBERT J. FAHEY, a midwest district representative.

Changes in the top management of Leeds & Northrup Company, Philadelphia, Pa., involving three new vice-presidencies have been announced.

A new post, vice-president—technical affairs, will be held by NATHAN COHN, formerly manager, market development division, marketing department.

In another move, the present director of marketing, DONALD E. MOAT, becomes vice-president—marketing, while retaining his former function.

The present director of manufacturing, JOHN F. QUEREAU, retains that function and becomes also vice-president—manufacturing.

Arcrods Corporation, Sparrows Point, Md., has appointed DR. GERARD E. CLUASSEN as director of research and welding engineering.

Arcrods Corporation is a producer of welding electrodes with manufacturing plants at Sparrows Point and Cleveland, and is a wholly-owned subsidiary of Air Reduction Company, Inc.

HUGH REDDITT has been named district representative for the central sales district of the Electric Steel Foundry Company, Portland, Oreg., in the middle Atlantic states. He will work with ESCO construction and crushing equipment dealers throughout New Jersey, Maryland, Delaware, Virginia, and the eastern half of Pennsylvania.

Before joining ESCO, Mr. Redditt sold heavy construction machinery and allied equipment in the Philadelphia metropolitan area and surrounding counties.

H. Redditt

E. L. Decker

E. L. DECKER has been appointed assistant chief engineer of the Fuller Company, Catasauqua, Pa. He was formerly supervisor of Compressor Engineering and in charge of Fan Development.

In his present post, Mr. Decker is replacing Robert E. Metzger, who has been appointed chief engineer of Fuller's Dracco Division in Cleveland, Ohio.

WEMCO, San Francisco, Calif., Division of Western Machinery Company, has produced a 16 mm. color film on jigging. The film, titled *It's The Extra Jiggle That Counts*, describes the history and theory of jigging, as well as the design improvements embodied in the modern Remer Jig.

Detailed scenes show the jigging of concrete aggregates at several midwest sand and gravel plants.

The movie is available for showings by all interested groups by writing to WEMCO, 650 Fifth St., San Francisco 7, Calif.

Raybestos-Manhattan, Inc., Passaic, N. J., announces the moving of its San Francisco district warehouse and offices from 131 Mission Street to new and larger quarters at 168 Beacon Street, South San Francisco, Calif.


**THERE IS THE RIGHT BIT FOR YOU OUT OF THE MANY POSSIBLE COMBINATIONS OF SIZES AND TYPES**

Write today . . . giving all information you can provide. Out of the many combinations possible with four matrices, several stone size ranges, three grades of diamonds, and various face contours we will recommend the bit we believe to be the best suited for your drilling conditions.

Always specify Sprague & Henwood "Oriented" Diamond Bits. They are described and illustrated in Bulletin 320-1.

**SPRAGUE & HENWOOD, Inc.**
**SCRANTON 2, PA.**
MEMBER OF: DIAMOND CORE DRILL MANUFACTURERS ASSOC.
New York — Philadelphia — Atlanta — Pittsburgh — Grand Junction, Colo. — Buchans, N.F.
Export Division: Sprague & Henwood International Corporation, 11 W. 42nd St., New York, N. Y.

Enter 206 on card, page 165




Enter 207 on card, page 165 →

# Many Marions Have Worked This Quarry

Hard digging encountered at this large central Ohio stone quarry requires rugged, durable machines. The owner of the 6-yard 4161 pictured has relied on Marion shovels for high output and low maintenance ever since the company's first pit opened more than 40 years ago.

Swinging a 2-yard clamshell bucket on a 50-foot boom, this Marion 362 handles 2500 tons of sand per average nine-hour day. There's a Marion machine of the right size and type for every excavating or materials handling job.

CONSULT **MARION** *MINING SPECIALISTS*
*for lowest costs on your property!*

**MARION POWER SHOVEL COMPANY—MARION, OHIO, U. S. A.**

More than 500 guests attended the Bucyrus-Erie Company of Canada, Ltd., plant dedication and reception at Guelph, Ont., on October 31. The company staged a plant tour and an equipment demonstration. Five major models of cranes and excavators, three of which are new being built at the Guelph plant, formed the nucleus of the show.

A four-man "flying squad" of specialists on tire retreading has been formed by the United States Rubber Company, New York, N. Y., to give speedy field service to retreaders in need of advice or technical help.

The men and their areas are: R. A. Bennett, who will cover the area west of Denver from his base in the company's Los Angeles plant; Floyd B. Fidler, serving the Midwest from the Chicago branch; Hugh T. Chastain, covering the South from the Atlanta branch, and W. W. Edwards, who will handle New York and New England from the company's New York headquarters.

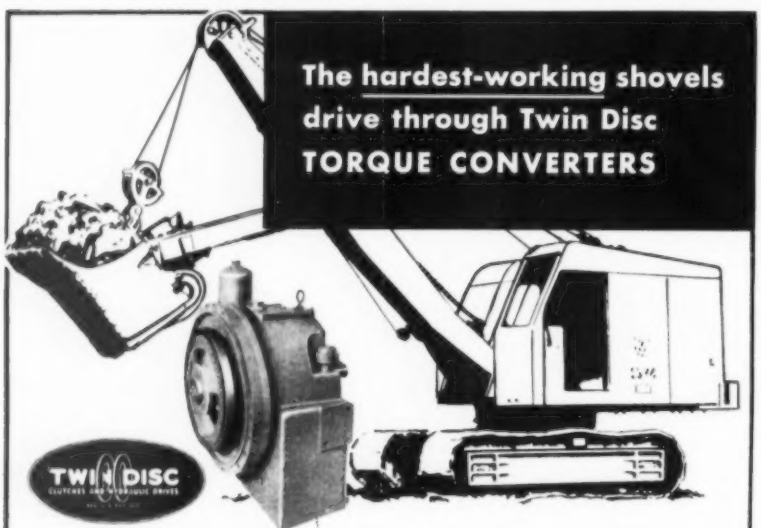
*Progress In Industrial Rubber Products* is the title of a new 16 mm. color and sound movie describing the operation of a modern rubber plant put out by the Quaker Rubber Division, H. K. Porter Company, Inc.

The 25 minute film reveals how raw materials are used to produce quality rubber products through improved production facilities. It describes the process of making various products.

Arrangements for showing the film can be made by contacting the advertising department, Quaker Rubber Division, H. K. Porter Company, Inc., Tacony and Comly Sts., Philadelphia 24, Pa.

KENNETH P. HAYES, service parts manager of the Transmission and Axle Division of the Rockwell-Standard Corporation, died November 20 at Mount Carmel Hospital in Detroit after a long illness.

Mr. Hayes started with the Timken-Detroit Axle Company, now the Transmission and Axle Division of Rockwell-Standard, in 1925.


*Evidence:* All eight of the leading excavator manufacturers now offer Twin Disc Torque Converters as standard or optional equipment. Here's what Twin Disc Converters do for heavy duty machinery—

- **Cushion out the destructive shocks and vibrations that shorten equipment life.**
- **Eliminate lugging and stalling under heaviest loads.**
- **Deliver up to twice normal torque to drum even at slow digging speeds.**
- **Extend cable life by providing constant line tension without dangerous jerking.**
- **Permit delicate inching and holding under power.**
- **Automatically adjust torque ratio to load demand.**

Specify a Twin Disc Torque Converter —three-stage or single-stage; 30 to 1000 hp—on your next shovel, clam shell or dragline. For converting horsepower to profits, it's the wisest investment you can make.

**TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois**

Branches or Sales Engineering Offices: Cleveland • Dallas • Los Angeles • Newark • New Orleans

**Enter 208 on card, page 165**


ED R. CURRY has joined the Kansas City district office of The Heil Company, Milwaukee, Wis. Products which Mr. Curry will represent include dump truck bodies, hydraulic hoists, and the Heiloader.

The area in which Mr. Curry will be responsible for these product sales will include the states of Missouri, Kansas, Nebraska, Iowa, and part of South Dakota.

E. R. Curry

W. Spelius

Announcement has been made of the appointment of WILLIAM SPELIUS as district manager of the Chicago office of the Industrial Division of the Harnischfeger Corporation, Milwaukee, Wis. In his new position Mr. Spelius will be responsible for sales of the company's complete line of "Thru-the-Air" material handling equipment, including P&H cranes and hoists.

Mr. Spelius, associated with Harnischfeger since 1947, and most recently assigned as district manager at Cincinnati, will succeed GEORGE ARTUS in the Chicago post, leaving Mr. Artus free for a new position as special representative for Harnischfeger's Industrial Division.

JAMES M. KNOX has been elected president of Research-Cottrell, Inc., Bound Brook, N. J.

The retiring president, CARL W. HEDBERG, will continue as a director of both Research-Cottrell and the parent Research Corporation. Mr. Hedberg had served with Research Corporation for 35 years and in 1954 became the first president of the subsidiary, Research-Cottrell.

Mr. Knox previously had served as executive vice-president. He had joined Research Corporation as financial vice-president in 1951, and since the formation of Research-Cottrell, Inc., in 1954, also served as secretary-treasurer and a director of the subsidiary company.



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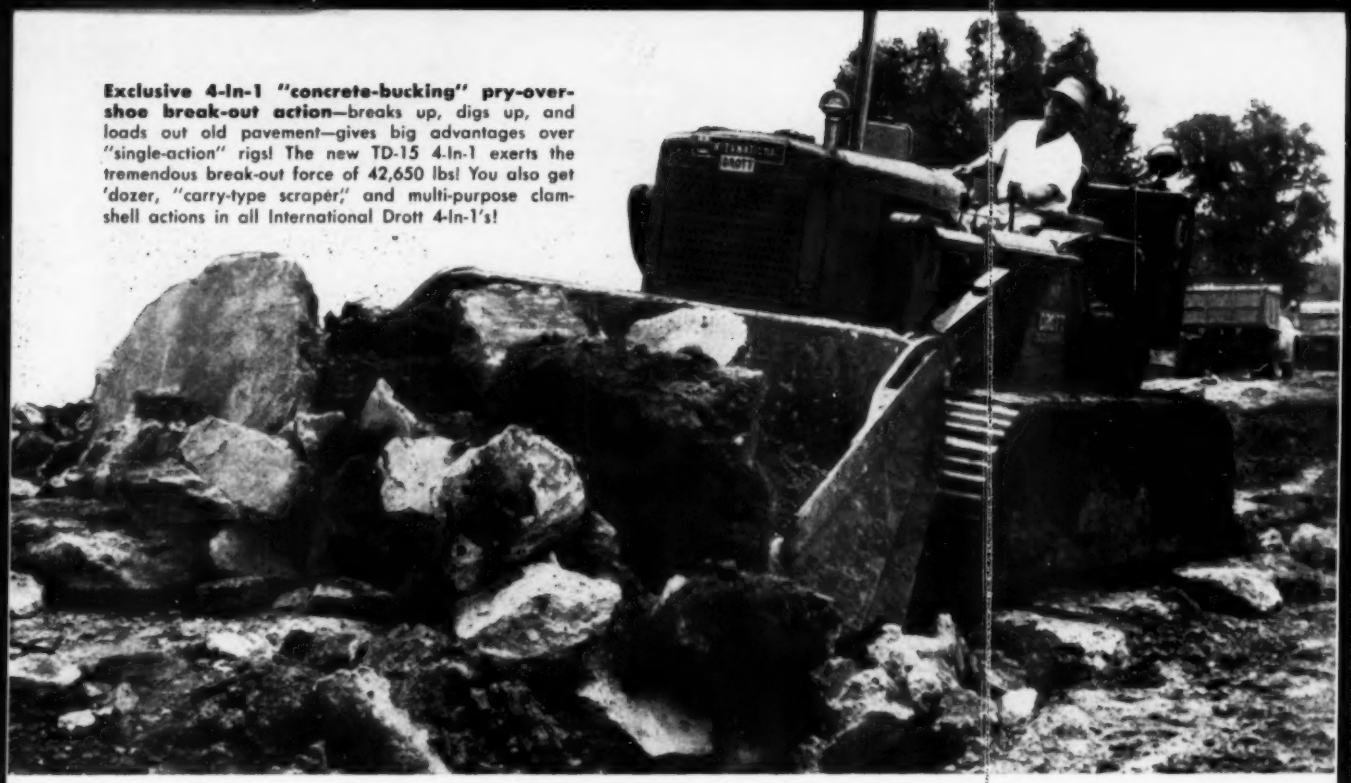


**Exclusive 4-In-1 "concrete-bucking" pry-over-shoe break-out action**—breaks up, digs up, and loads out old pavement—gives big advantages over "single-action" rigs! The new TD-15 4-In-1 exerts the tremendous break-out force of 42,650 lbs! You also get 'dozer, "carry-type scraper," and multi-purpose clam-shell actions in all International Drott 4-In-1's!

# NEW International® Drott TD-15 Four-in-One

## capacity . . . to outload 100 hp "single-action" rigs plus versatility unlimited . . . of exclusive clam-action

**Sized, powered, geared,** and **controlled** to decisively outproduce any "single-action" loader in the 100-hp field—the new 2¼ cu yd TD-15 4-In-1 gives you exclusive International Drott clamshell action!

Here's new big-job-sized versatility unlimited! Simply move the selector lever with fingertip ease—to get any one of four big-capacity machine actions needed. On big job after big job, the TD-15 4-In-1 can replace costly big-capacity limited-action machines one after another!

And whether this 4-In-1 replaces four or forty machine actions for you, you get it for one moderate price!

Smooth, years-proved, 115 hp 6-cylinder International diesel engine in the new TD-15 4-In-1 gives you full advantage of increased hydraulic system capacity—of new 6-speed, full-reverse transmission mobility – of new cycle-speeding forward-reverse Shuttle-Bar control!

Correct balance and long-track stability eliminate the need for counter-weighting the TD-15 4-In-1. Track length on the ground is a full 98⅜ inches!

### Compare capacity and versatility in your own pit, quarry or strip-mine!

**There's only one way to size-up** TD-15 4-In-1 performance—to measure its job range and capacity—to compare its money-making capabilities to a yard-full of one-purpose rigs. That's to get on the deep-cushioned seat and prove to yourself what it can do. See your International Drott Distributor for a demonstration!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

# Obituaries

JOHN J. FLOOD SR., a director of The Ruberoid Company, died on October 25, 1958, at Fort Worth, Tex.

Mr. Flood was a vice-president of Ruberoid from 1952 to 1955, when he resigned because of ill health. He was elected to the board of Ruberoid in 1952 and continued to serve the company as a director and consultant until his death.

He was formerly chairman of the board of the Asphalt Roofing Industry Bureau and served as a consultant to the building materials division of the War Production Board in Washington, D. C., during World War II.

LESTER C. HAWK, 73, former director of research at Penn-Dixie Cement Company, Allentown, Pa., died on September 27 after a brief illness. Mr. Hawk went to work for the Dexter Cement Company, in 1906, and in 1926 this firm merged with Penn-Dixie, when Mr. Hawk was chief chemist. He retired from active service in 1954.

WELLS F. ANDERSON, 56, a director and senior vice-president of the National Gypsum Company, died on September 21, after a long illness.

A recognized authority on geology, Mr. Anderson joined National Gypsum's Buffalo office in 1951 as production manager. He was promoted to the post of vice-president of manufacturing in 1954, and became director and senior vice-president of operations in May, 1956.

CHARLES DONOVAN SMITH II, president-treasurer of the Memphis Stone and Gravel Company, Memphis, Tenn., died on October 27 at the age of 40 years.

THOMAS C. TAYLOR, 76, general traffic manager for Ideal Cement Company, died on September 16 after a brief illness. He joined Ideal on September 1, 1941.

MANUEL H. FIDALGO, 47, vice-president in charge of engineering for Maule Industries, Incorporated, Miami, Fla., died on October 1 after a heart attack.

Mr. Fidalgo was associated with government engineering projects in Puerto Rico before World War II. During the war years he designed ships for the U. S. Maritime Commission in Washington, D. C. He joined Maule Industries in 1955.

HAROLD A. BUTZ, treasurer of the Lehigh Portland Cement Company, Allentown, Pa., died unexpectedly at his home on October 18. He had been with the firm for almost 40 years.

GUY B. MATTHEWS, 58, chief chemist at the Cape Girardeau, Mo., plant of the Marquette Cement Manufacturing Company, died unexpectedly of a heart attack October 24, at his home. He joined Marquette in 1930 as chief chemist and served in this capacity until his death.

JOHN L. HEIMLICH, 69, one of the founders of the LeRoy Lime and Crushed Stone Corp., LeRoy, N. Y., died in Buffalo General Hospital on September 22.

Mr. Heimlich became sole owner of the business in 1953 and sold it in 1956.

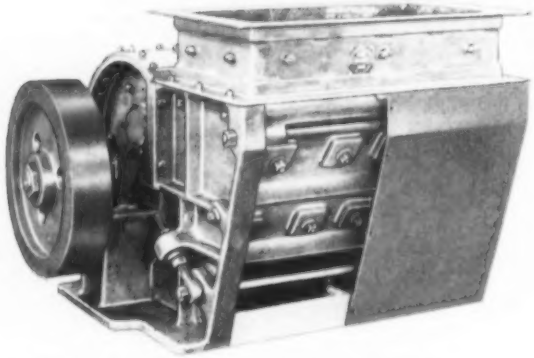
FRANK W. ERLIN, president of the California Rock and Gravel Company, San Francisco, Calif., died on October 27 at the age of 78, after a brief illness.

JOSEPH A. TORER, 52, traffic manager of the Medusa Portland Cement Company, Cleveland, Ohio, died on July 21. He had been associated with Medusa for 32 years.

JAMES E. JACKSON, 44, superintendent of the Thornton plant of Marblehead Lime Company, died unexpectedly November 15. Mr. Jackson had been with the firm since 1947.

CHARLES H. HOGUE, president of the Consumers Sand Company, Topeka, Kans., died on September 19 after a brief illness.


American's 30 SERIES HAMMERMILL

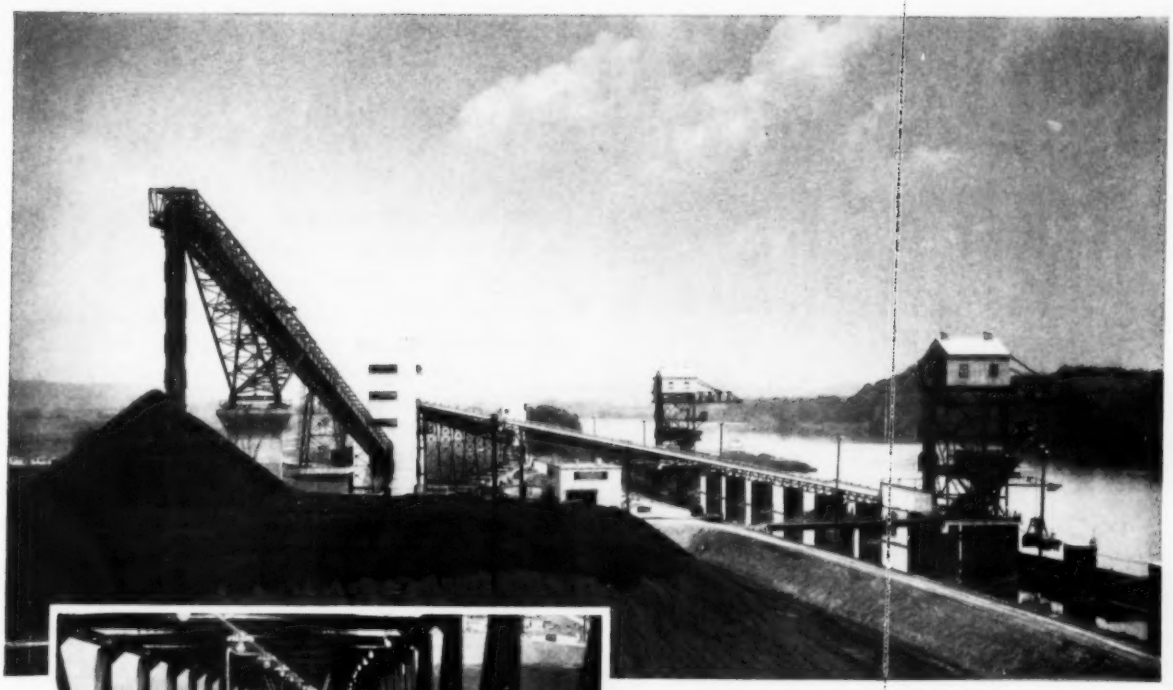


for high volume reduction with minimum maintenance rely on hammermills backed by American's 50 years of experience.

Write for American's bulletin BETTER STONE CRUSHING

American PULVERIZER COMPANY
ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS
1059 MACKLIND AVE. ST. LOUIS 10, MO.

Enter 210 on card, page 165



*PERMASEAL® Idlers – installed for 42", 48" and 60" belts at 10,000 ton per day coal handling facility on Ohio River.*

# NEW-TYPE CONVEYOR IDLERS STRETCH GREASING INTERVALS TO YEARS

***Grease 'em by-the-month idlers are expensive to maintain.*** The Jeffrey PERMASEAL® Idlers in this coal handling system won't need greasing for a year—maybe several years. Their slightly higher initial cost (due to superior bearing protection) is quickly absorbed by unparalleled low cost of maintenance.

***Bearing failure is the major cause of idler failure.*** The PERMASEAL® Idler's unique double seal design protects bearings as they have never been protected before. On coal handling systems and dirty, abrasive handling jobs, Jeffrey PERMASEAL® Idlers are proving their ability to outlast any other idler on the market.

***Get more data on PERMASEAL® Idlers.*** Your materials handling supervisor should have all the facts on PERMASEAL® Idlers. Contact a Jeffrey distributor, or write The Jeffrey Manufacturing Company, 917 North Fourth Street, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

# STILL AVAILABLE . . .

## Pit and Quarry's LATEST Lightweight Aggregate and Portland Cement PLANT MAPS

These maps were designed to help you understand the portland cement and lightweight aggregate markets better. Thousands of people have already found them exceedingly helpful; we are certain you will benefit from them too.

### PORTLAND CEMENT MAP

This map is 34 inches high by 40 inches wide and printed on sturdy 60 pound stock. It lists each producing plant, by state and city, now in operation, or planned to be in operation by the end of 1958, in the United States, Canada, Mexico, Cuba and Puerto Rico. Each plant's producing capacity at the end of 1957 is shown plus any expansions that were anticipated in 1958. Also listed is the production process . . . wet or dry, employed by each plant and the brand names of the cements produced. To make the picture complete, grinding plants and distributing plants are shown and listed too.

### LIGHTWEIGHT AGGREGATE MAP

This map is 34 inches wide by 22 inches high and printed on strong 60 pound paper. All lightweight aggregate plants known to be in existence are listed on this map, alphabetically, by state. In addition, each plant's address, the type or types of lightweight aggregate it produces, and the brand name or names of the product are shown.

One of the features this map provides is the listing of the mailing address of each plant.

| | QUANTITY | PRICE (each) |
|---|---|---|
| CEMENT MAPS | 1 - 10 | 1.00 |
| | 11 - 25 | .75 |
| | Over 25 | .50 |
| AGGREGATE MAPS | 1 - 10 | .35 |
| | 11 - 20 | .30 |
| | Over 20 | .25 |

*Let us know how many of the above maps you want and we'll be happy to fill your order promptly.*

**PIT & QUARRY PUBLICATIONS, INC.**

**431 S. Dearborn St. • Chicago 5, Ill.**



*Enter 213 on card, page 165* →

# These engine users save money with Allis-Chalmers low maintenance...

### 24 engines average over 5,000 hours before overhaul

Allis-Chalmers engines in 24 trucks hauling ore at a large western copper mine average over 5,000 hours of operation before overhaul. Many have given more than 20,000 hours of service and are still "going strong."

BC-20

### Has gone 7,000 to 8,000 hours since overhaul

The Allis-Chalmers 6DC1879 in this Bucyrus-Erie dragline at an eastern plant has had but one overhaul since it was new in 1949, and has gone another 7,000 to 8,000 hours since then.

### No repairs in 6,000 hours

This Koehring dragline works 10 to 24 hours a day for its Louisiana owner. It is powered by an Allis-Chalmers 1879 that has had no repairing since it was new, over 6,000 hours. The operator reports, "I haven't had a minute of downtime."

## ...you can, too!

One reason Allis-Chalmers engines *earn* more, *save* more, is because they are on the job *working* more of the time.

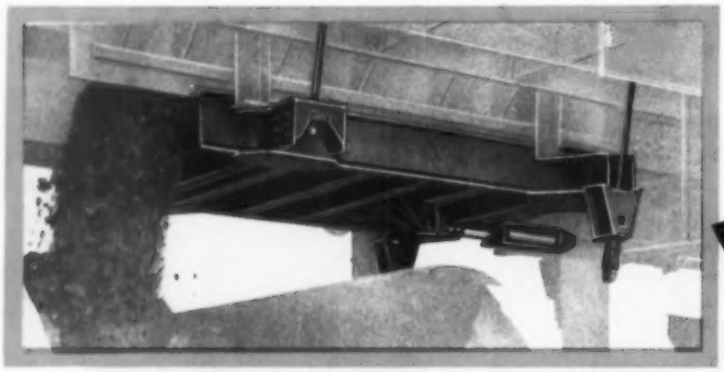
Their rugged, simple construction results in a minimum of maintenance. Parts are fewer and stronger — that means less wear, less that can go wrong.

"Clean," simple design naturally means easier servicing, too. And you are always close to fast parts and service, wherever you are. Result: Allis-Chalmers engines are back to work quickly. See your dealer for the full story of Allis-Chalmers' dependability and economy. Allis-Chalmers, Milwaukee 1, Wis.

**ALLIS-CHALMERS**

***POWER* FOR A GROWING WORLD**

# HEAVY DUTY HYDRASTROKE* FEEDER



**for PLANTS and QUARRIES**

PATENT APPLIED FOR

**Exclusive HYDRAULIC OPERATION**

A Reciprocating Feeder easily adapted to feed Screens, Crushers, Belts, Trucks, Skips or Railroad Cars.

- **FEEDER DESIGNED FOR SEVERE SHOCK LOADING**
- **ROCKER MOUNTING OR SUSPENSION**
  eliminates wear due to friction, needs no lubrication, takes minimum head room.
- **WIDE RANGE OF SIZES**
  widths from 36" to 96", feeding capacities from 200 to 7500 tons per hour.

Write for Illustrated Brochures

*TRADEMARK

NICO **NATIONAL IRON COMPANY**

SUBSIDIARY OF PETTIBONE MULLIKEN CORP., CHICAGO 51, ILLINOIS

50th Avenue West and Ramsey Street
Duluth 7, Minnesota

*Enter 214-A on card, page 165*

# TRY US FOR SIZE AND TREAD

**World's Widest Range of Sizes and Tread Designs!**

Whether you operate light or heavy equipment, no matter what your particular job requirements are, Southern Tire can supply the size and tread design best suited to your needs. Modern 3-sectional, interchangeable-tread molds retread any tire—regardless of growth—without buffing to the breaker strips. Lugs of all Southern Tire retreads have as much rubber as a new tire and more undertread than any rock service tire. For careful, experienced workmanship and fast pickup and delivery *at your job site after work hours*, you can depend on Southern Tire every time.

You Get New Tire Mileage at Approximately Half the Cost!

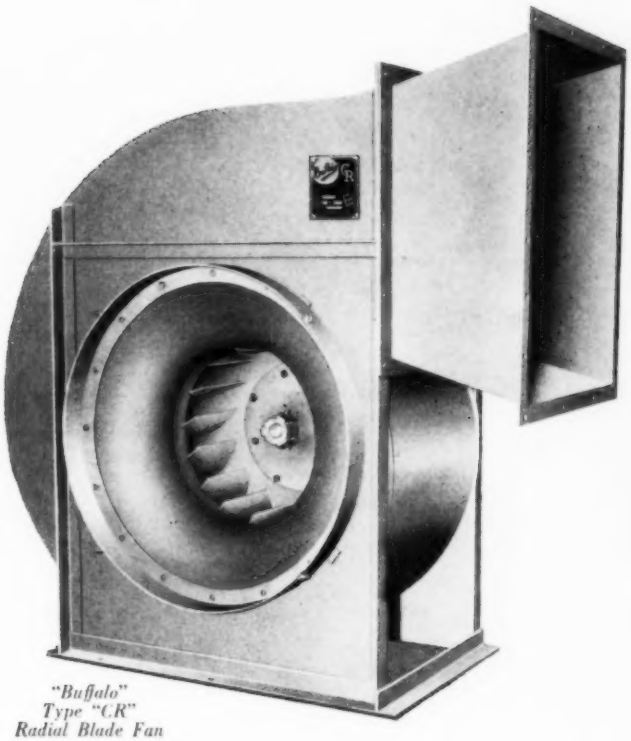
***Always Deal With an Independent — Pioneers of the Industry . . . Perfecters of Modern Retreading Methods.***

**SOUTHERN TIRE COMPANY**

1414 Broadway
SHEFFIELD, ALA.

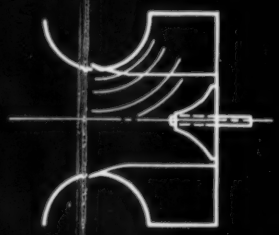
Phone Collect
EV 3-2312

*Enter 214-B on card, page 165*



*"Buffalo"*
*Type "CR"*
*Radial Blade Fan*

Gradually divergent outlet minimizes turbulence . . . obtains peak static pressure conversion. Result is reduced housing wear, increased efficiency.



Design of the deep die-formed inlet and wheel flange reduces abrasion to a minimum. Mating sections form a true half-circle with no irregularities. Resultant smooth air flow reduces wear, provides top performance.

## ABRASION RESISTANCE OF "CR" FAN REDUCES MAINTENANCE-REPLACEMENT COSTS

Where you need a high volume, high pressure fan that will stand up under the most severe heavy-duty industrial jobs, especially where abrasion is a problem, the "CR" will give you the most for your fan dollar.

The "Buffalo" Type "CR" Fan's superior design, heavy gauge construction and painstaking workmanship insure optimum performance during a long life of dependable service. Its high capacity characteristics often permit substitution of a smaller fan for many direct-connected applications. This can save many dollars on initial fan costs.

The "Buffalo" Type "CR" Fan offers many advantages for your most punishing air moving applications. Contact your nearby "Buffalo" engineering representative, or write for Bulletin FD-205.

"Buffalo" Fans give you the exclusive "Q" Factor — the built-in QUALITY that provides trouble-free satisfaction and long life.

**BUFFALO FORGE COMPANY**
**Buffalo, N. Y.**

Buffalo Pumps Division, Buffalo, N. Y.
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING • AIR CLEANING • AIR TEMPERING • INDUCED DRAFT • EXHAUSTING • FORCED DRAFT • COOLING • HEATING • PRESSURE BLOWING

*"Not merely to sell; but to serve . . . not only to make good steel products; but to make them still better . . . not only to fulfill today's requirements; but to anticipate tomorrow's—these are the principles that constantly guide CF&I."*

G. F. Franz
President

## Grinding Mill Bulletin #3

This series of ads on grinding ball rationing of the makeup charge is being presented by CF&I in keeping with our policy "*Not merely to sell; but to serve*". It is our hope that the series will shed some new light on the subject by expressing established principles in practical terms, and that grinding mill operators who are interested in increasing the efficiency and production capacity of their ball mills will find this information of value.

# The One-Size Ball Makeup Charge In An Operating Mill

Previous articles in this series have pointed out that determining the optimum size assortment of grinding balls that should be added as a makeup charge is a practical means of improving mill operation; and that the best makeup charge of one-size balls should be established before an attempt is made to work out a rationed makeup charge.

It is better to use oversize rather than undersize balls in the makeup charge. The reason for this is that there is always the possibility of encountering ores that are more difficult to grind. The larger ball would reduce this difficult-to-grind ore, whereas a smaller ball would not. This leaning towards oversize balls is recommended even though they will give fewer contacts and less attrition grinding than a smaller ball.

### Indications of Incorrect Ball Size

In a closed circuit mill, a too-small ball size will fail to reduce larger feed particles, and too much tramp oversize will be circulated. Thus, the circuit will become choked, and you will find it necessary to reduce mill feed. With a too-large ball size, coarse particles will be reduced in size, but excessive amounts will need further reduction and excessive slimes may be produced from the impact of large balls. The partially reduced ore particles will overload the classifier, making a reduction in mill feed necessary. Thus both too-small or too-large balls will lower mill production.

In an open circuit mill, balls that are too large do not produce the fineness of grind, or liberation size, required, and they may produce too many slimes. Grinding balls that are too small, on the other hand, permit tramp oversize to enter the next process.

### Price May Be Deciding Factor

The 3″ diameter steel ball is commonly the lowest-priced ball available whereas small size grinding balls are priced higher. The 3″ balls are used most frequently in beneficiation mills and are usually obtainable on an immediate-shipment basis. However, where $3\frac{1}{2}$″ and 3″ diameter balls give similar results in grinding a particular ore, the $3\frac{1}{2}$″ ball may be chosen because of the insurance it provides against the production of tramp oversize should more difficult-to-grind feed ore be encountered later. Nevertheless, the lower price of the 3″ ball may be the deciding factor.

### Radical Changes are Undesirable

As in other experimental work in an operating circuit, it is good practice not to make too radical a change in the ball size used. Where it is indicated that 4″ diameter balls would be more satisfactory than the 3″ balls in use, it would be wiser to test $3\frac{1}{2}$″ balls first, then check results to prove you are going in the right direction. Or, if it is considered that $2\frac{1}{2}$″ balls will improve results as compared with the use of 3″ balls, it may be better to substitute $2\frac{1}{2}$″ diameter balls for one-quarter or one-half the charge and then check for improvement before using $2\frac{1}{2}$″ balls as 100% of the makeup charge.

Whatever the optimum size grinding ball you need for the makeup charge in your operating mill, you'll find it available from CF&I . . . in diameters from $\frac{3}{4}$″ to 5″. CF&I grinding balls are forged from special analysis steel and are carefully inspected—throughout production and again immediately prior to shipment—to ensure that they are free of surface pits, circumferential ridges or other surface unevenness. The CF&I representative nearest you will gladly give you complete details.

In the next article in this series, we will discuss general methods of rationing, and the specific steps to be taken in working out a ball ration.

*For a reprint of the article on which this ad is based, please write on your company letterhead to: Mining Supply Department, The Colorado Fuel and Iron Corporation, P.O. Box 1920, Denver, Colo.*

**OTHER CF&I STEEL PRODUCTS FOR THE CEMENT INDUSTRY**

CF&I Grinding Rods · CF&I Grader Blades · CF&I Industrial Screens
CF&I Mine Rail and Accessories · Wickwire Rope · CF&I Rock Bolts

**FORGED STEEL GRINDING BALLS**
**THE COLORADO FUEL AND IRON CORPORATION**

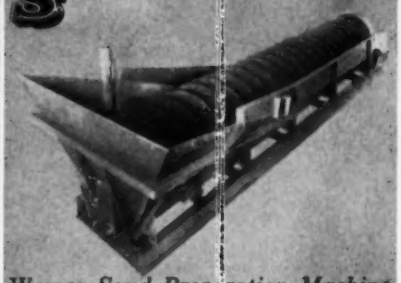
Albuquerque · Amarillo · Atlanta · Billings · Boise · Boston · Buffalo · Butte · Chicago · Denver · Detroit · El Paso · Ft. Worth · Houston
Kansas City · Lincoln · Los Angeles · New Orleans · New York · Oakland · Oklahoma City · Philadelphia · Phoenix · Portland · Pueblo
Salt Lake City · San Francisco · San Leandro · Seattle · Spokane · Wichita

6083-A

again . . . Wemco

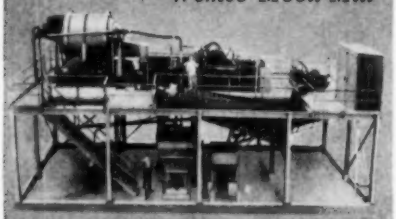
**PRODUCERS**

in the world of **Aggregate**

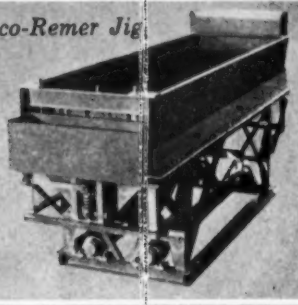


*Wemco Sand Preparation Machine*

*Wemco Mobil-Mill*



*Wemco-Remer Jig*



*Wemco Sandclone*

. . . and other complete equipment and services for aggregate production.

It's a combination geared to the progress of the aggregate industry; machines developed for more profitable high-specification production; skills paving the way for continuing improvement in application and production. Today—and in the future—depend on the men of Wemco to turn a problem into a profitable operation; look to Wemco equipment to produce the right aggregate for the need. Your questions will be answered promptly and positively—whatever the operation.

WEMCO®

Western Machinery Company

650 Fifth Street • San Francisco 7, Calif.

**Next month, February 16-19, your industry meets in colorful New Orleans to discuss the problems most vital to your business in the period ahead.**

**These are critical times. Make your plans, make your hotel reservation and BE THERE!**

*Some of the subjects you'll hear and talk about in panel and open round table discussions:*

- Our industries' share of the market in 1959 and beyond
- Industry negotiations with unions in 1958
- Engineering and research, our U. of Maryland laboratory
- Merchandising techniques
- Public relations programs
- Impact of zoning regulation
- Safety programs
- Business problems: taxation, freight rates, better cost analysis, many others
- Mobile Radio

Convention registrations will begin at The Roosevelt Friday morning, February 13.

Committee meetings start February 13. General sessions open Tuesday, February 17, and continue twice daily through Thursday afternoon.

**1959 CONVENTIONS**

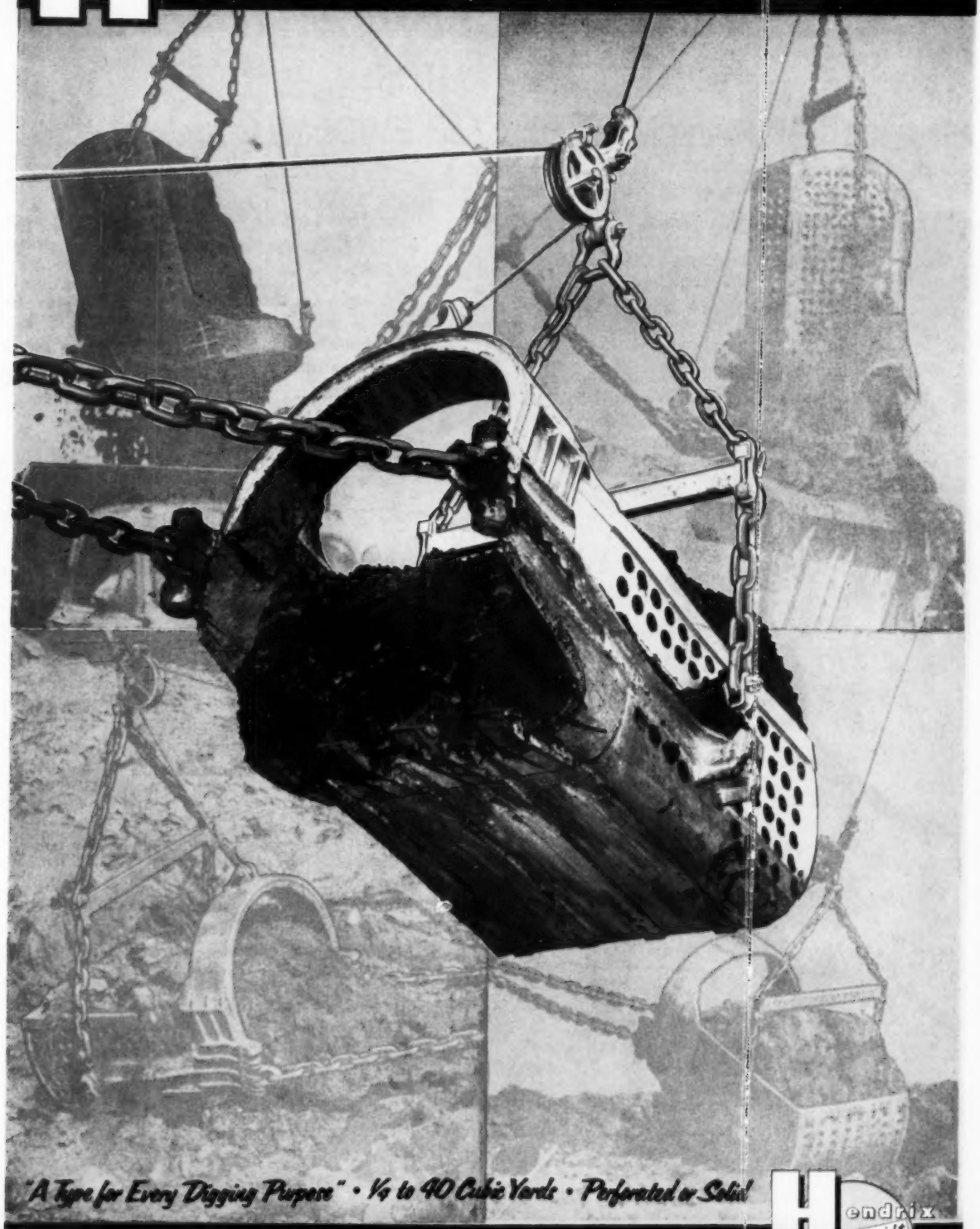
NSGA NATIONAL SAND AND GRAVEL ASSOCIATION
**43rd ANNUAL CONVENTION**

NATIONAL READY MIXED NRMCA CONCRETE ASSOCIATION
**29th ANNUAL CONVENTION**

**NATIONAL SAND AND GRAVEL ASSOCIATION**
**NATIONAL READY MIXED CONCRETE ASSOCIATION**

# YOUR MOST IMPORTANT EVENT IN 1959

# HENDRIX DRAGLINE BUCKETS



*"A Type for Every Digging Purpose" • ½ to 40 Cubic Yards • Perforated or Solid!*

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

Hendrix Lightweight Dragline Buckets

# USERS OF **NEW**
# **ROEBLING HERRINGBONE* WIRE ROPE**
# HOLD THESE TRUTHS TO BE SELF-EVIDENT...

**That Herringbone is the most practical and *needed* wire rope development to come along in years.**

**Herringbone, the regular lay and Lang lay rope, is actually two-ropes-in-one rope. Thus, the qualities that make these two ropes *good* ropes, combine to make Herringbone *excellent.***

## HERE'S WHY:

The steel core of Herringbone provides the *ideal* support for the two pairs of Lang lay and one pair of regular lay strands used in its construction. In addition, the outer wires are heavier for extra abrasion resistance, and good flexibility is maintained by the finer wires inside. This combination of features enables Herringbone to give *longer service* in most applications.

Herringbone has been used on a wide variety of excavating equipment and tough hoisting jobs with impressive results. Its applications are practically unlimited on installations which call for all-steel ropes and on many where fiber core ropes are now being used. Another of Herringbone's added attractions is the fact that it eliminates the necessity for stocking Lang lay rope for one job and regular lay for another.

Your Roebling Distributor has Herringbone right now. He has, also, copies of a brochure describing Herringbone, the newest Roebling Star Performer. If you wish, write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for literature and anything you'd like to know about Herringbone.

*Reg. App. For

**ROEBLING**

*Branch Offices in Principal Cities*
*Subsidiary of The Colorado Fuel and Iron Corporation*

**HERRINGBONE**
**WIRE ROPE**

## Ready-Mix plant owner says

# "I Looked at Other Loaders . . . but I Liked Tractomotive best"

When it comes to buying equipment, careful consideration is given to its purchase by E. C. Voit & Sons, Inc., owner of a Ready-Mix concrete plant in Madison, Wis.

"I looked at other loaders," said Mr. Voit, "but I liked this 2-yd TL-20 TRACTOLOADER* best." He added that he also likes the Tractomotive dealer — "our relations have been mighty happy over the years."

A good product backed by a good dealer — that's the combination Tractomotive offers you—no matter where you are located. Allis-Chalmers construction machinery dealers throughout the world handle Tractomotive loaders and other Tractomotive products exclusively.

Like Mr. Voit, why not see what a modern TRACTOLOADER will do before *you* decide. On the TL-20 and TL-16, the exclusive *one-lever* control of speed and direction alone will add many extra yards to your daily production. See your nearby Allis-Chalmers dealer soon . . . he has a full line of TRACTOLOADERS to show you — two- and four-wheel drive.

*TRACTOLOADER is a registered Tractomotive trademark

*ALL TRACTOMOTIVE EQUIPMENT IS SOLD AND SERVICED BY YOUR ALLIS-CHALMERS DEALER*

**TRACTO—**
a sure sign
of modern design

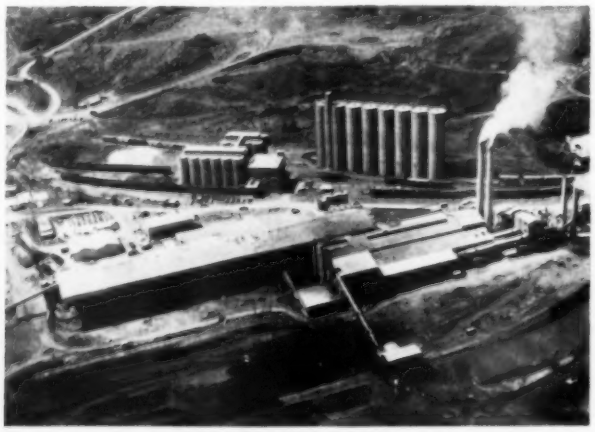
**TRACTOMOTIVE**
TRACTOMOTIVE CORPORATION • DEERFIELD, ILLINOIS

TRACTOLOADERS • TRACTOSHOVELS • TRACTORIPPERS • TRACTOHOES • TRACTOSIDEBOOMS

# MACDONALD Installations in 1958

- IDEAL CEMENT CO.
  West Sacramento, California
- LOUISVILLE CEMENT CO.
  Speed, Indiana
- MEDUSA PORTLAND CEMENT CO.
  Dixon, Illinois
- MISSOURI PORTLAND CEMENT CO.
  Sugar Creek, Missouri (near Independence)
- MONARCH CEMENT CO.
  Humboldt, Kansas
- PHOENIX CEMENT CO.
  Division of American Cement Co.
  Clarksdale, Arizona
- SOUTH DAKOTA STATE CEMENT PLANT
  Rapid City, South Dakota
- SOUTHWESTERN PORTLAND CEMENT CO.
  Odessa, Texas
- SOUTHWESTERN PORTLAND CEMENT CO.
  Victorville, California
- VOLUNTEER PORTLAND CEMENT CO.
  Knoxville, Tennessee

- ALPHA PORTLAND CEMENT CO.
  Lime Kiln, Maryland (near Frederick)
- COLUMBIA-SOUTHERN CHEMICAL CORP.
  Zanesville, Ohio
- COLUMBIA-SOUTHERN CHEMICAL DIVISION
  Pittsburgh Plate Glass Co.
  Barberton, Ohio
- DIAMOND PORTLAND CEMENT CO.
  Middlebranch, Ohio
- GIANT PORTLAND CEMENT CO.
  Egypt, Pennsylvania



VOLUNTEER PORTLAND CEMENT CO., Knoxville, Tenn.

ALPHA PORTLAND CEMENT CO., Lime Kiln, Md.

## MACDONALD COMPLETE SERVICE

*LAYOUT*
*DESIGN*
*CONSTRUCTION*

## MACDONALD ENGINEERING CO.

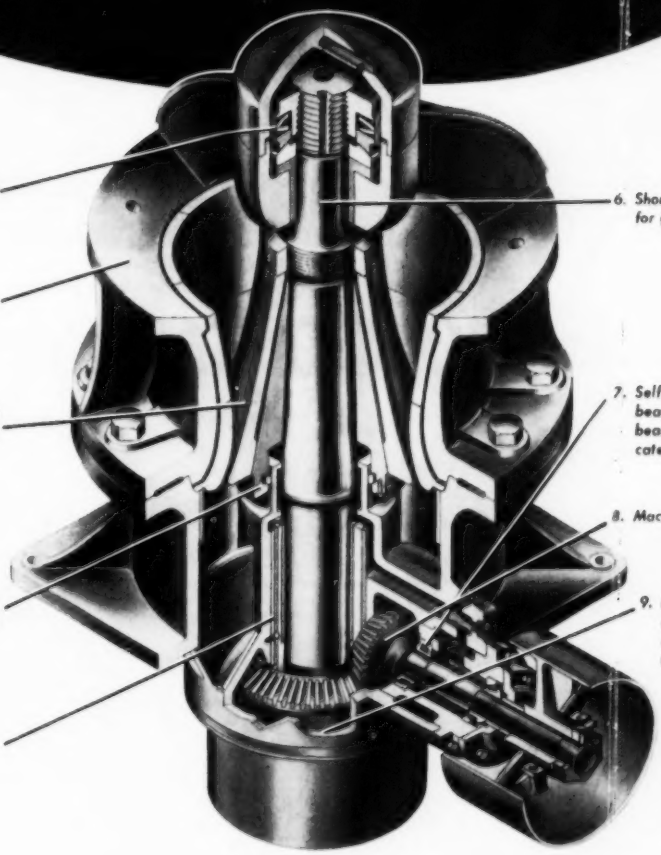
**Constructing Engineers**

885 Bryant Street
San Francisco, Calif.

22 West Madison St. • Chicago

2349 Yonge St.
Toronto, Canada

# Traylor-MADE TY GYRATORY CRUSHER



1. Spring suspension affords protection against tramp iron.
2. Cast steel frame with spider and upper shell cast integral.
3. Self-tightening Bell Head and Curved Concaves, of manganese steel.
4. Traylor dust seal excludes dust and grit from the lubrication chamber.
5. Bronze bushed eccentric assures longer life.
6. Short, extra heavy main shaft for greater strength.
7. Self - contained countershaft bearing, fitted with roller bearings, automatically lubricated.
8. Machine cut steel gearing.
9. Positive and automatic lubrication system, either self-contained or located outside the crusher.

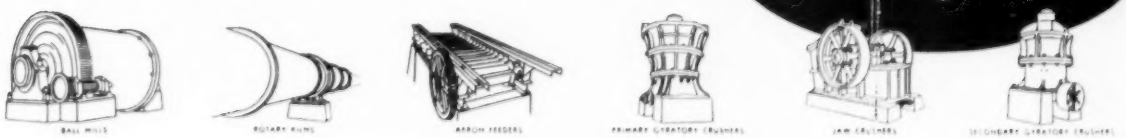
Above are some of the outstanding features of the Traylor TY Gyratory Crusher. The TY Crusher enables operators to secure large tonnages of small product, of uniform size, with low percentages of oversize and waste fines. Write for bulletin No. 8112 today!

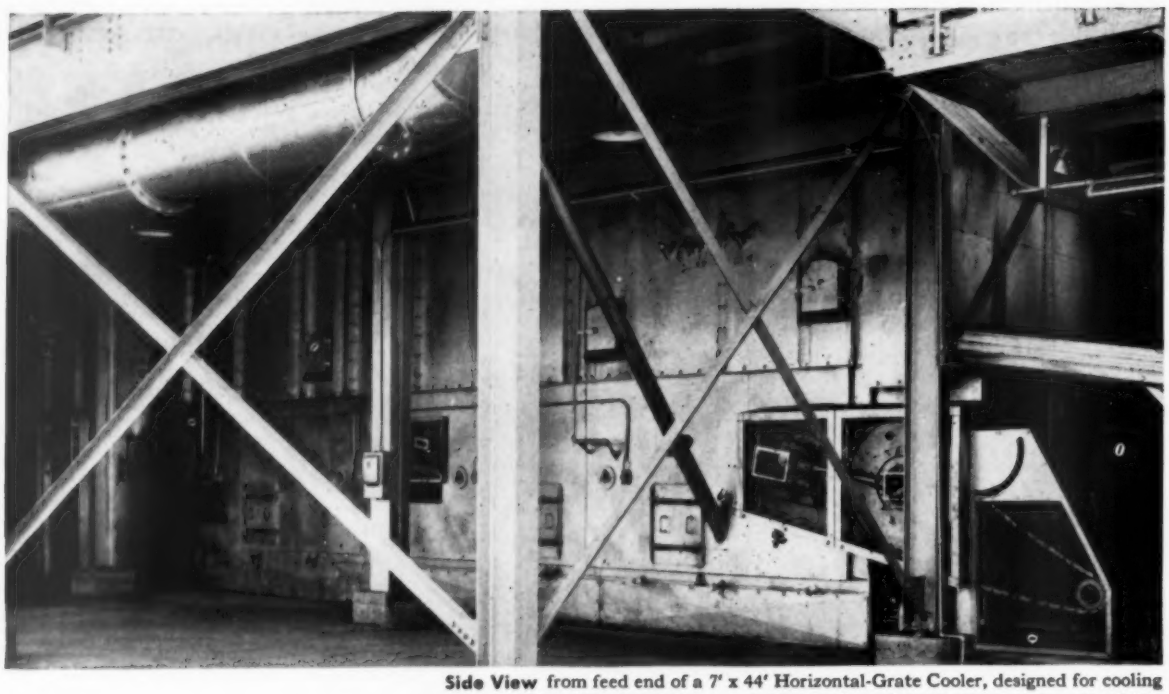
TRAYLOR ENGINEERING & MFG. CO., 1105 MILL ST., ALLENTOWN, PA.

Sales Offices: New York — Chicago — San Francisco

Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P.Q.

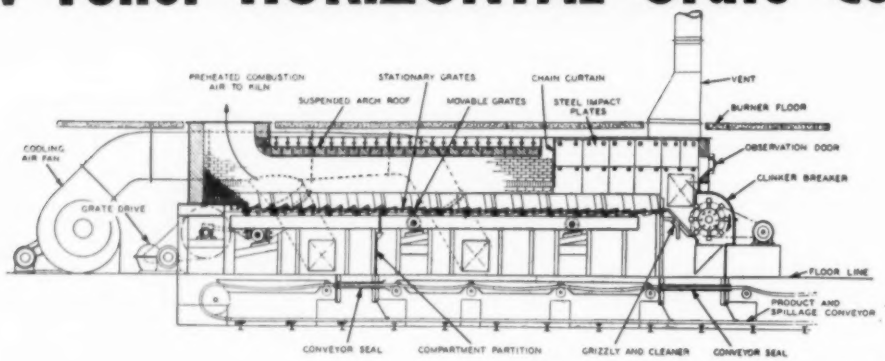
Traylor





**Side View** from feed end of a 7' x 44' Horizontal-Grate Cooler, designed for cooling 4,000 barrels of Portland cement clinker per day, showing crank type grate drive

# New Fuller HORIZONTAL-Grate Cooler




**Cross-section drawing** showing construction and arrangement of a typical Horizontal-Grate Cooler with clinker breaker.

**Compact . . . Economical . . . Fast-cooling.** Already proven in use, the compact, efficient design of Fuller's new Horizontal-Grate Cooler promises savings for many plants. It's an ideal choice where headroom is at a minimum . . . where a short, compact unit is desired.

Like the famous Fuller Inclined-Grate Cooler, the new Horizontal-Grate type is meeting with wide acceptance. One of the new units, already in operation, is shown above.

A Fuller Horizontal-Grate Cooler or an Inclined-Grate unit is the right answer to your cooling needs. Fuller coolers are used for a wide range of materials including lime, dolomite, cement clinker, iron nodules, phosphate nodules, sinter, ores, and others. Fuller sales engineers will be glad to discuss your cooling problems and make recommendations for your plant—without obligation, of course.

**Features of the Fuller HORIZONTAL-Grate Cooler**

- Requires a minimum of headroom
- Short length if necessary
- Better secondary air temperature control
- Less refractories
- Less installation time
- More rapid clinker distribution
- More uniform bed thickness

**FULLER COMPANY**
**100 Bridge St., Catasauqua, Pa.**
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Birmingham • Chicago • Kansas City • Los Angeles
New York • San Francisco • Seattle

Fuller
pioneers in harnessing AIR

4570
CO-30

*"See Chemical Engineering Catalog for details and specifications".*

## PORTER BROWN LIMESTONE COMPANY—

# 100% MURPHY DIESEL

**Plant at Springfield, Tenn. . . . . 100% MURPHY POWERED**

**Plant at Oneonta, Alabama . . . . . 100% MURPHY POWERED**

**Owner Porter Brown and Superintendent William Boring . . 100% SOLD ON MURPHY DIESEL**

Here's why Porter Brown Limestone Company, of Springfield, Tenn., *specifies* Murphy Diesel power when they buy crushing equipment—

*"In view of Murphy's good service at our other plants, we specified Murphy power when we bought equipment for our Oneonta plant. Murphys are satisfactory in every way . . . especially for low operating costs and less maintenance. We're sold 100% on Murphy Diesel."*

Porter Brown's plant at Oneonta (shown below) is averaging 1500 tons per day of 1¼" minus limestone. A 161 HP (continuous) Murphy Diesel powers the jaw crusher and vibrating grizzly in the portable primary, another 161 HP Murphy powers the cone crusher intermediate scalping unit, while a 107 KW Murphy Diesel-Electric Generator Set meets the electrical requirements of the plant.

Aggregate producers and contractors throughout the country are swinging to dependable, economical Murphy Diesels for both portable and stationary plant operations.

Your nearby Murphy Diesel Dealer will gladly help you "power for profit" with the size and type of Murphy Diesel you need.

*For stationary installations, Murphy's steady, uniform power and low fuel costs assure efficient power for crushers, screens, conveyors, washing equipment, etc. And don't overlook the economy advantages of Murphy Diesels for generators, pumps, compressors, or for powering or re-powering shovels.* 408RO

**MURPHY DIESEL**

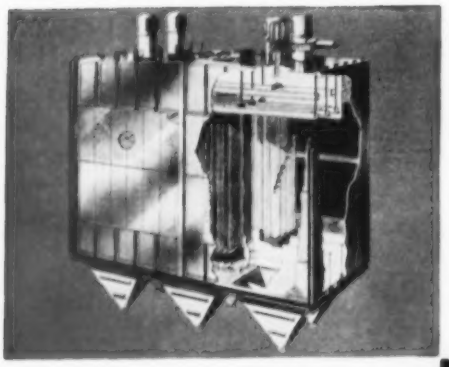
**HEAVY-DUTY POWER for Rock**

**Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.**

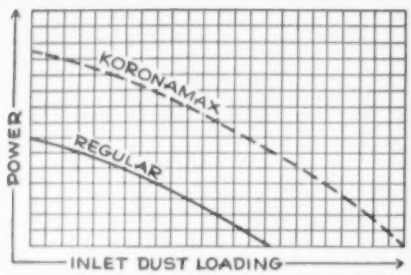
## MURPHY DIESEL COMPANY

**5307 W. Burnham St. • Milwaukee 14, Wis.**

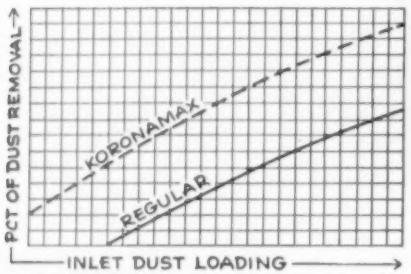
**SALES — PARTS — SERVICE throughout the Nation**



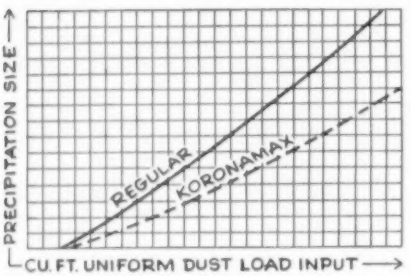
## Another Koppers Exclusive in ELECTROSTATIC PRECIPITATION



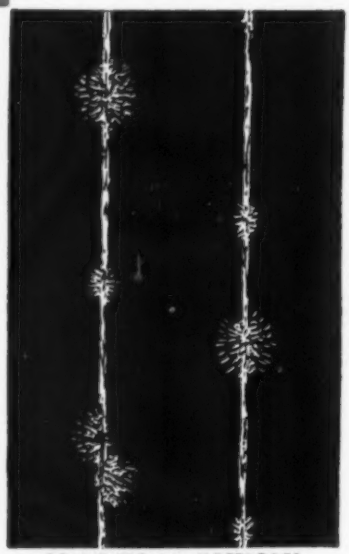

**INCREASED POWER**—The evenly spaced discharge points of "Koronamax" Electrodes reduce the arc-over tendency and permit increasing power input.



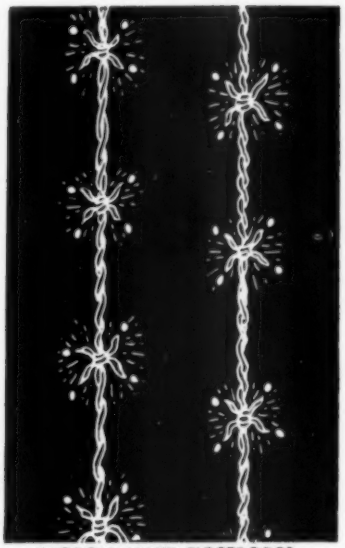

**HIGHER EFFICIENCY**—Replacement of regular electrodes with "Koronamax" Electrodes allows higher power input — greatly increased efficiency.




**SMALLER SIZE**—In new installations desired efficiency may be obtained with smaller unit when "Koronamax" Electrodes are used.



CONVENTIONAL ELECTRODES



"KORONAMAX" ELECTRODES

## "KORONAMAX" ELECTRODES increase efficiency and capacity of electrostatic precipitators

"Koronamax" Electrodes developed by Koppers are now in service in several different applications and their *controlled* corona discharge has resulted in greatly increased capacity and efficiency. This unique type of precipitator electrode may solve *your* gas cleaning problem.

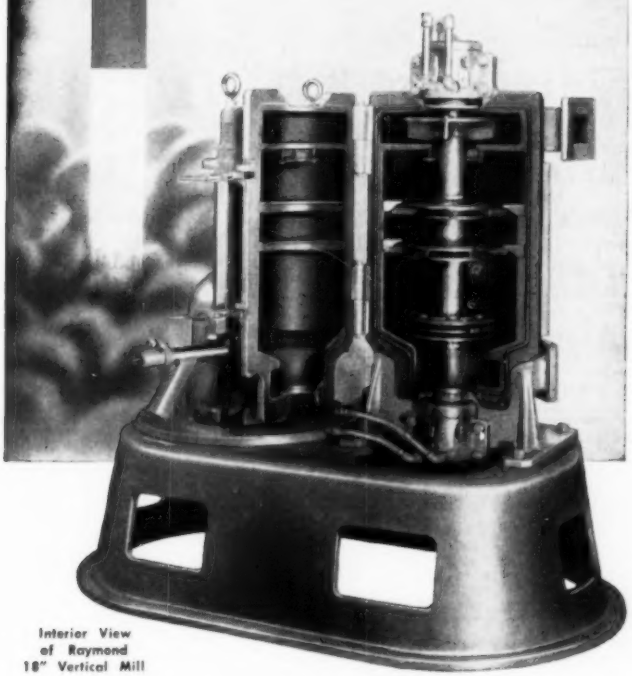
Koppers' experience, constant research and extensive field testing have led to this important advance in precipitator design. Check with Koppers to see if "Koronamax" Electrodes can help you get top precipitator efficiency. For more information, write: KOPPERS COMPANY, INC., 9901 Scott Street, Baltimore 3, Md.

KOPPERS

## ELECTROSTATIC PRECIPITATORS

*Engineered* Products Sold with *Service*

# *Another Exacting Job for the* RAYMOND VERTICAL MILL



Interior View of Raymond 18" Vertical Mill

Now working with industry on today's newest developments, the Raymond Vertical Mill is serving manufacturers in the production of solid rocket propellants.

Since this unit is designed for pulverizing to extreme fineness and uniformity, it does an excellent job in grinding the ammonium nitrate and ammonium perchlorate oxidizers to the required specifications.

Outstanding features of the Vertical Mill are:—

1. Ability to meet exacting particle size distribution requirements for proper burning rate and molding qualities.
2. Easily adjusted for a wide range of product fineness.
3. Quick and complete accessibility for adjustments, clean-out or maintenance.
4. Trouble-free operation with no over-heating of product.
5. Automatic and dust-free operation.
6. Compact layout and flexible installation.

**One company has already been using the Raymond Vertical Mill for over two years, and has obtained excellent results on ammonium nitrate and perchlorate. Raymond mills have also been used for many years on the potassium chlorate, perchlorate, and nitrate oxidizers.**

Write for data on special applications of the Raymond VERTICAL MILL, and ask for Bulletin No. 78

## COMBUSTION ENGINEERING, INC.

*Raymond Division*

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CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

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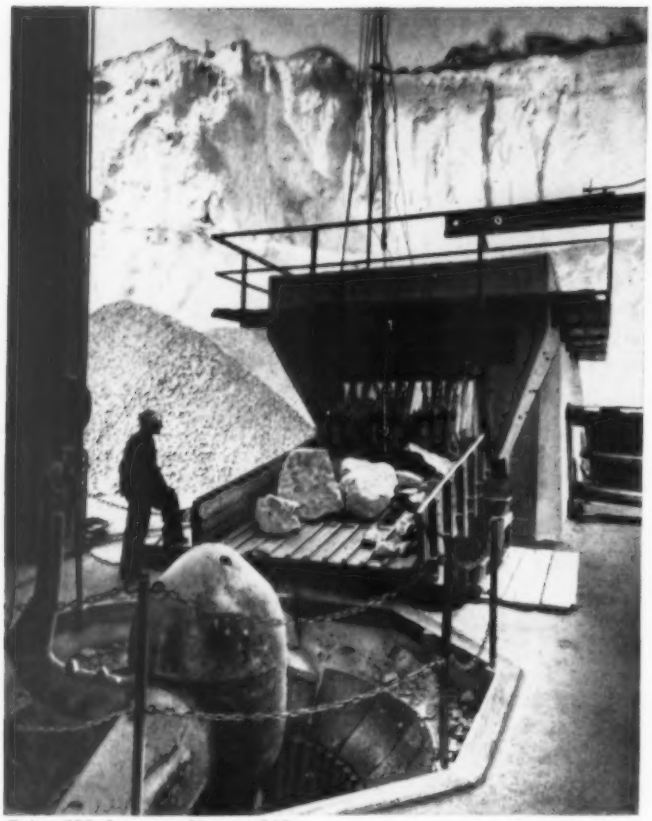

## NEW ECONOMY... with DRAVO-SCHENCK vibrating screens— feeders—conveyors

Through an exclusive agreement, Dravo Corporation is now licensed to manufacture vibro-conveyor equipment based on the original designs developed and patented by the Carl Schenck Company of Darmstadt, Germany.

Employing a unique mechanically operated "Micro Thrust" exciter unit, these units provide trouble free operation and low maintenance costs. Dravo-Schenck screens, feeders and conveyors have a wide variety of applications in the handling of ferrous and non-ferrous ores, sinter, chemicals, cement clinker, crushed stone, coal, abrasive or other difficult-to-handle material. Also available is a helical type conveyor which operates vertically in a space saving spiral and handles bulk material up to four inches in diameter.

Our engineers will confer with you on specific problems. Complete information on this equipment is available. Write for Bulletin No. 1475, Dravo Corporation, Pittsburgh 22, Penna.

**DRAVO**
CORPORATION

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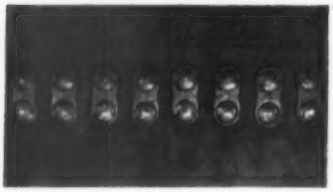

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## *Sawyer* BUTTON and PLATE FASTENERS

for TRANSMISSION • CONVEYOR
ELEVATOR BELTS

FOR A TIGHT SPLICE USE SAWYERS — STRONGER
EASY TO APPLY • ALWAYS DEPENDABLE

*We manufacture several styles of BELT FASTENERS for all types of belting.*

**Sawyer Belt Hook & Wedge Co., Inc. • PAWTUCKET 5, RHODE ISLAND**

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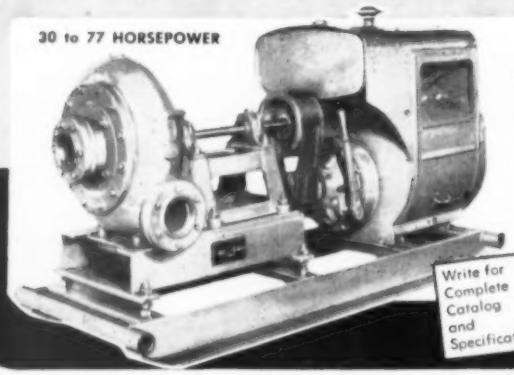
30 to 77 HORSEPOWER



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NEW *Lightning* PORTABLE
**SAND & GRAVEL PUMPS**
**4 AND 6 INCH SIZES**

New design for a wide variety of uses and pumping conditions. 4-inch pump has 30 H.P. air-cooled engine; 6-inch pump has 6-cylinder radiator cooled engine. All wearing parts are of Hi-Chro-Hi, a super hard, abrasion resisting semi-steel. Maintenance is negligible, parts replacement is simple.

**KANSAS CITY HAY PRESS CO.**
*Manufacturers of Heavy-Duty Lightning Sand and Gravel Pumps*
801 WOODSWETHER ROAD • KANSAS CITY, MISSOURI



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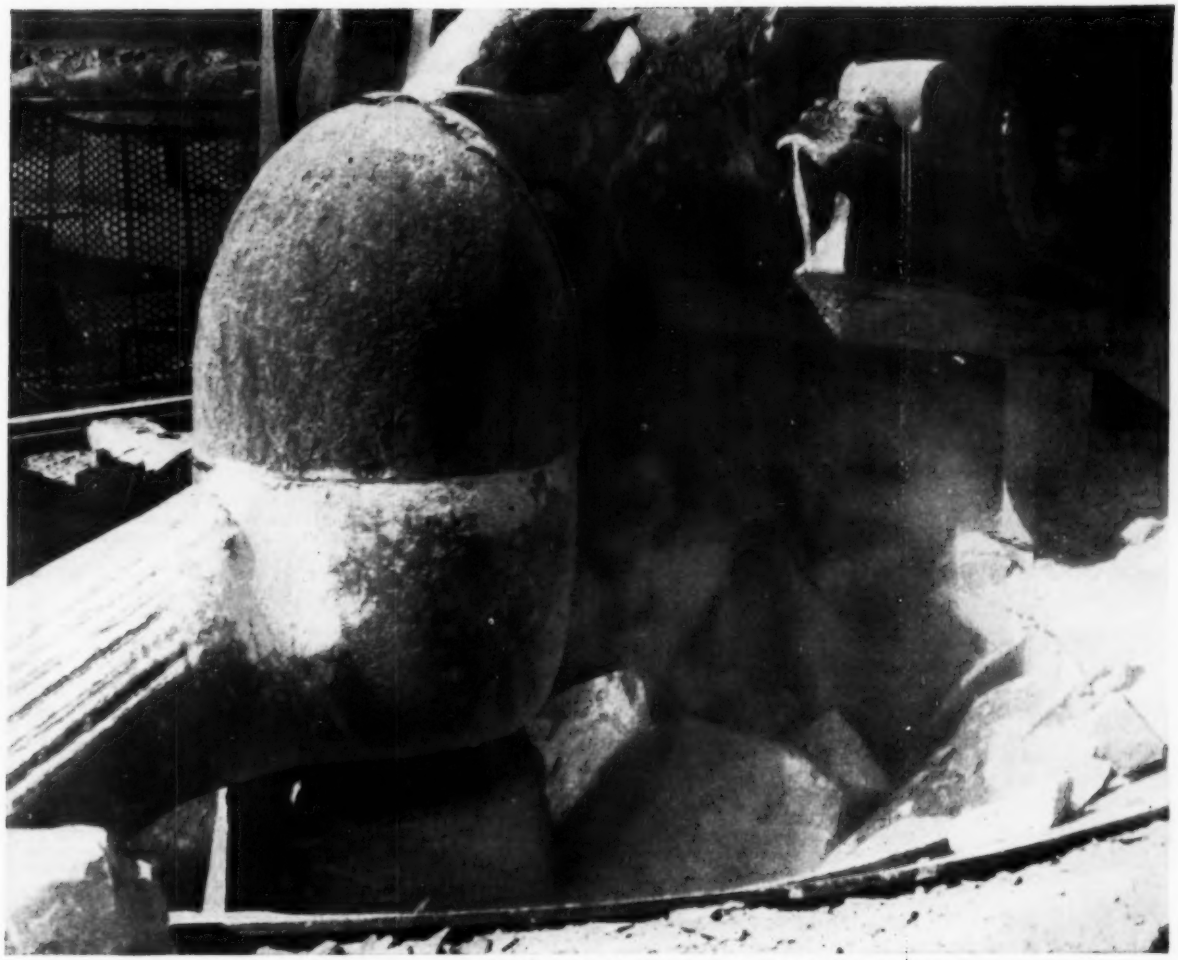


Crushers like this – fitted with Ni-Hard concaves – are turning in impressive service records at Spencer Quarries, S. D. They crush Sioux Quartzite, which, like Taconite, is among the hardest known minerals . . . and it has a compressive strength of over 100,000 psi.

# NI-HARD crusher concaves outlast manganese steel 3 to 1

At Spencer Quarries, Spencer, South Dakota, Ni-Hard® concaves in 6-inch crushers, have lasted three times longer than manganese steel rings in the throat area, where compression forces are highest.

In a 30-inch gyratory crusher at Spencer, Ni-Hard bottom ring concaves are in their third year of service—where previously the best manganese steel rings wore out in six months. All of Spencer's Ni-Hard concaves were supplied by Brom Machine and Foundry Co., Winona, Minn.

Whether crushing quartzite at Spencer or working tough Taconite on the Mesabi Range, economical Ni-Hard nickel-chromium cast iron is proving better able to resist abrasion and high compression forces than any other material.

Ni-Hard concaves are available from authorized producers throughout the country. For the address of the one nearest you, write to Inco.

*Registered trademark

**THE INTERNATIONAL NICKEL COMPANY, INC.**

67 Wall St. INCO New York 5, N.Y.

Looking down the throat of a gyratory crusher. Concaves in the important lower ring are of long-lasting Ni-Hard.

# NI-HARD

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

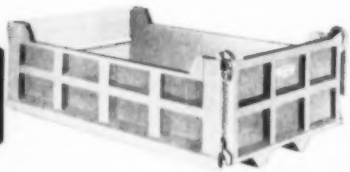
# DAYBROOK

## BUILDS DUMP BODY STYLES *FOR EVERY* HEAVY HAULING REQUIREMENT

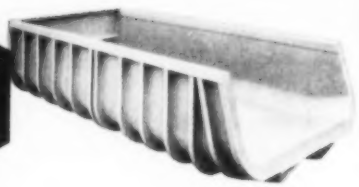
CONTRACTOR STYLE "V" Type Side Braces

CONTRACTOR STYLE Tapered "BOX" Type Side Braces

EXCAVATOR STYLE Straight "BOX" Type Side Braces



ROCK BODY Boulder Dam Style



Rugged Daybrook Dump Bodies offer the contractor-excavator-builder many exclusive advantages in design in addition to all-welded *steel* or *aluminum* fabrication by body craftsmen.

In addition to a wide selection in styles and capacities in standard designs, Daybrook will build special dump bodies to customers' requirements.

For one truck or a fleet . . . when you "team-up" long-life Daybrook Dump Bodies with conventional or telescopic type hoists on hauling-dumping operations, you have "one" responsibility . . . all Daybrook.

*Write for complete line broadsides on Daybrook Dump Bodies and Hoists. Request form numbers BR-B-57 and BR-H-57.*

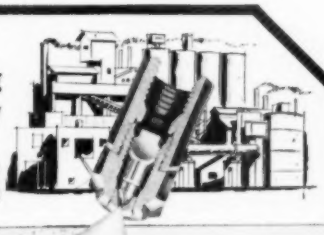
**DAYBROOK HYDRAULIC DIVISION**
**Young Spring & Wire Corporation**
**BOWLING GREEN, OHIO**

DAYBROOK Speedlift® TRUCK EQUIPMENT

*Nationwide Sales and Service*



atomizing
## SPRAY NOZZLES

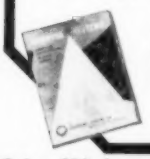


FOR DRY CEMENT MILL GAS COOLING • HEAVY SOLIDS REMOVAL and SCRUBBER APPLICATIONS

plus GENERAL DUST CONTROL

hollow cone spray pattern

HIGH EFFICIENCY spray nozzles that operate on hydraulic pressure alone and low water volume per hour. Provide even pattern distribution and excellent atomization. Made in stainless steel and brass for maximum service. Proved for performance in mill operation. Nozzles of all other types also supplied including pneumatic atomizing nozzles for every need.



**SPRAYING SYSTEMS CO.**
3224 Randolph Street • Bellwood, Illinois
*FOR COMPLETE INFORMATION*
write for Catalog No. 24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INCLUDING URANIUM & LIMESTONE — ANYWHERE

**FOUNDATION TEST BORING**

**GROUT HOLE DRILLING**

Skilled crews and complete stock of core drills and accessory equipment maintained at all times

*Core Drill Contractors for more than 60 years*

**JOY MANUFACTURING CO.**
*Contract Core Drill Division*
MICHIGAN CITY, INDIANA


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**DEPENDABLE**
FOR 60 YEARS
ALLOY
*Woven Wire*
SCREENS

**TWIN CITY IRON & WIRE CO.**
**St. Paul, Minnesota**


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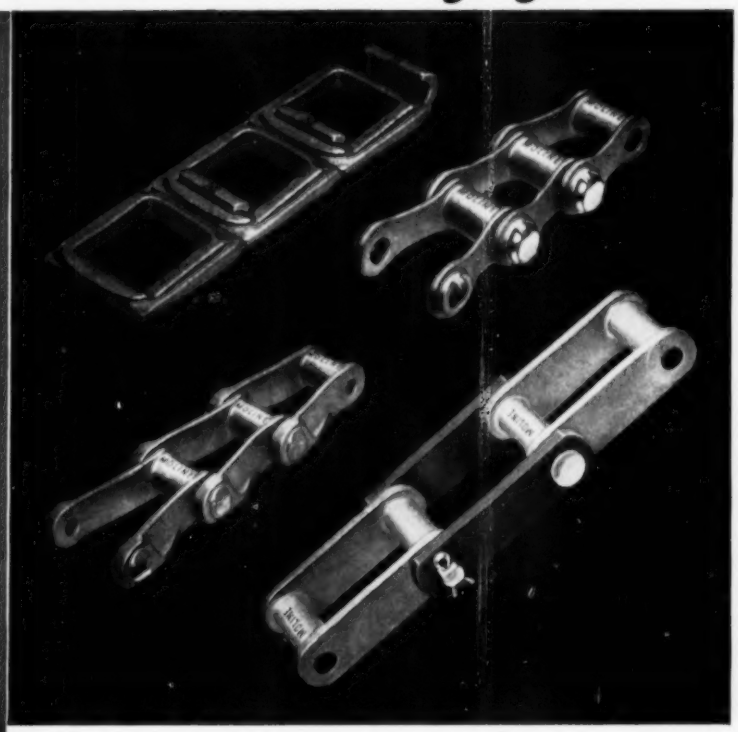
# Moline link attachments adapt Moline Chains to many jobs

**STANDARD ATTACHMENTS**
Only a few of the wide variety of Moline Chain attachments are shown here.



## Conveying and Elevating

THERE IS NO LIMIT to the number of jobs which can be handled by Moline Chains. With the wide variety of standard link attachments available, the possibilities for adaptation are endless. Both right and left hand types are made to the exact size and pitch of the regular chain links.

With Moline Chain, equipped with standard attachments, you can push, pull, scrape, elevate and carry an endless variety of materials and objects.

At the same time you can cut your overall chain costs because Moline Chains and attachments are engineered for maximum efficiency . . . trouble-free performance . . . and long life. Only Moline Chains are triple-tested to guarantee maximum quality control.

*Write for descriptive literature today!*

Moline MALLEABLE Chains

*Specializing in the manufacture of chains*

LEADER FOR 60 YEARS

**MOLINE MALLEABLE IRON COMPANY**
St. Charles, Illinois

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BUCKETS • SPROCKETS • CHAIN • WHEELS • GEARS • SHEAVES • CABLE FITTINGS • BAR BENDERS, CUTTERS • R. R. CASTINGS • FIRE TOOLS, ETC.

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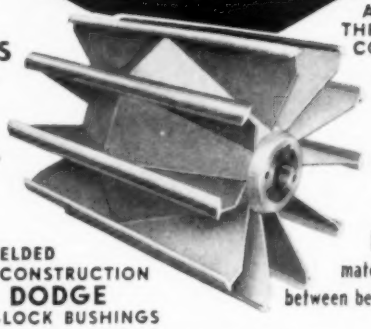
# CUT OPERATION COSTS with VAN GORP *Turn-Clean* PULLEYS



SIZES 8" to 60"

ADDS TO THE LIFE OF CONVEYOR AND ELEVATOR BELTS

✓ Self-Cleaning Cone Design

✓ Prevents any material build-up between belt and pulley

ALL WELDED STEEL CONSTRUCTION WITH **DODGE** TAPER-LOCK BUSHINGS

CATALOG OF OVER 3,000 SIZES ON REQUEST

**Van Gorp Mfg. Inc.**

**PELLA, IOWA**

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# LEVER-TYPE JAW CRUSHER STILL IN USE AFTER 36 YEARS

—at Keystone, So. Dakota

LOWER COST PER YEAR

**RELIANCE** HEAVY-DUTY CRUSHER

- Heavier, stable—you save money on upkeep.
- Minimum abrasion — outlasts other designs 3 to 1.
- Long jaw plates — adjustable for fineness.
- Crushing, screening and washing plants—50 to 1,500 tons-per-day capacity — engineered to your needs.

Booklet on request, pictures installations.

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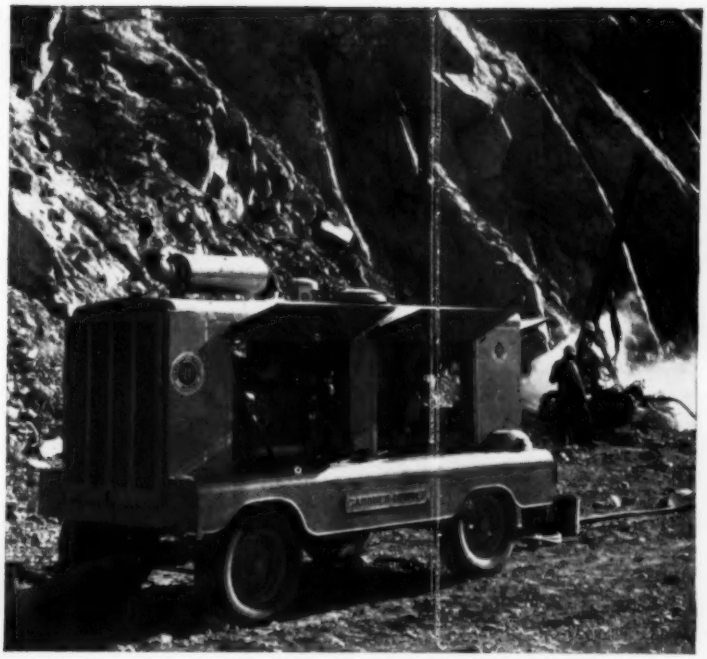
Gardner-Denver DH-143



Gardner-Denver Rotary 600

# Pace Setters for Quarry Production... Gardner-Denver Quality Drilling Equipment

***For Blast Hole Drilling***

SUPER 5½" DH143 CRAWLER DRILLS—self-propelled heavy-duty drill. Packs plenty of deep hole punch in all formations.

DELUXE "AIR TRAC"® CRAWLER DRILLS—all controls for drilling, drill positioning and crawler drive are centralized for ease of operation. Available with 4" or 4½" drills. Also "Air Trac" without remote controls.

NEW GARDNER-DENVER "MOLE-DRIL"*—for use with rotary rig. An in-the-hole drill in two models for drilling 4¾" and 6½" hole in hardest rock.

WAGON DRILLS—light- and heavy-duty for every need.

AUGER DRILLS—both wagon drills and "Air Tracs" can be equipped with rotary motor for auger drilling.

QUARRY DRILLING AND BROACHING DRILLS.

DEEP HOLE DRILLS, DRIFTERS AND SINKERS—a complete line.

AIR FEED LEG DRILLS—and air feed legs for sinker mounting.

DRILL FEEDS AND CONTROLS—to fit every drilling job.

***For Quality Drill Steel . . .***

SECTIONAL DRILL RODS—highest quality—shot-peened and carburized to stand down-the-hole gaff longer.

RING SEAL SHANKS—replaces old-type water swivel without adding additional length to drill.

COUPLINGS—extra long threads—made for longer drilling life.

***For Air Power . . .***

GARDNER-DENVER ROTARY PORTABLE COMPRESSORS—five models that offer water-oil cooling for all-weather operation, "THRIFTMETER"® fuel control, easy-to-get-at parts for speeding maintenance, clutch that eliminates cold-weather dry compressor starting. Sizes from 125 cfm. to 900 cfm.

STATIONARY AND SKID-MOUNTED COMPRESSORS—eight compact WB compressor packages that deliver continuous trouble-free performance. Water-cooled. Combination radiator-intercooler saves cooling water. Sizes from 1150 cfm. to 142 cfm.

***For Building Your Own Jumbo . . .***

JUMBO COMPONENTS—for tractor and truck mounting or building your own jumbo.

DRILL POSITIONERS—provide hydraulic swing and dump on end of booms for drill and feed positioning.

HYDRAULIC BOOMS—powered by creep-free hydraulic cylinders that operate at low pressures.

HYDRAULIC REMOTE CONTROLS—for remote-control operation of drills, feeds, drill positioners and booms from any centralized position.

***Plus . . .***

Bit Grinders • Centrifugal Pumps • Air Hoists • Drill Steel Shapers • Sump Pumps • Air Maintenance Tools Oil Forges • Air Line Oilers • Air Motors • Breakers Tampers

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**GARDNER-DENVER**

Gardner-Denver Company, Quincy, Illinois

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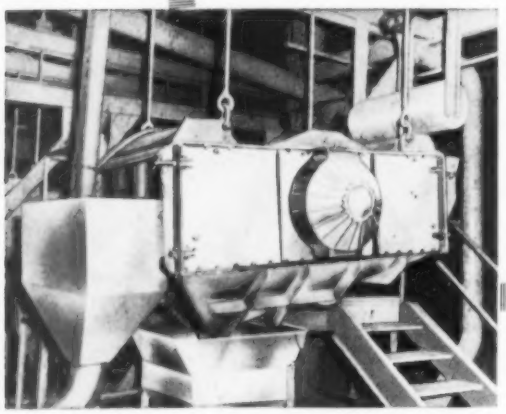
# *Why* GYROSET SCREENS are Money-Makers!



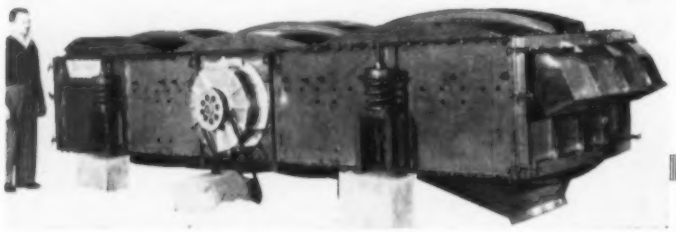
Suspended Gyroset 3′ x 6′ scalping oyster lime slurry at 1/8″ opening, for a large cement company.

## • • • • *uniform sizing*

5′ x 8′ special scalping screen with abrasion resistant liners—5″ opening.

## • • • • • • *lower costs*

Enclosed unit for fine dusty screening.



## • • • *increased output*

GYROSET-equipped plants are "all set" to achieve peak screening efficiency in 1958.

The positive eccentric action of GYROSET Screens gives a full circle throw over the entire screen surface. With only two bearings, the eccentric action has the fewest moving parts.

GYROSET Screens are equally effective for sizing slurry scalping, washing or dewatering. They can operate at any degree of pitch (or slope). Easily adjustable for maximum output when rough scalping. Can be set for top efficiency in grading or dewatering with output exceeding any other screening unit. Stroke adjustable from 0 to 3/8″.

Enclosed unit for fine dusty screening such as finished cements, fine ground stone, lime, etc.

These machines are simply but ruggedly built, and adaptable in action. Sizes available: 36″ to 72″ wide, 4′ to 16′ long, one to three decks.

**Write today for full details**

## GYROSET Advantages

- ► **Positive Eccentric Action**
- ► **Positive Stroke Adjustment**
- ► **Only 2 Bearings**
- ► **Heavy Structural Shaft Housing**
- ► **Center Line of bearing and fly wheel close to side sheets for minimum overhang.**
- ► **Taper lock fly wheel bushing for assured tightness and ease of maintenance.**

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# BROADCAST

## *Section*

**Cement Company in the Great Lakes area requires**

## Maintenance Superintendent

to be responsible for all maintenance in a new 4,500,000 barrel plant. Preferable mechanical engineer, not over 35 years of age.

*Salary competitive.*

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**Chicago 5, Illinois**

### WANTED

1—Raymond #5448 High side, four roll mill, complete with all fans, motors and electrical equipment.

1—W. S. Tyler 4x10 two or three surface T-38 Hum-mer screen, enclosed type.

3—200 KVA transformers, 60 cycles, 1 phase, Volts 16,500/33,000 to 430/215.

**SARGENT CALCIUM CO.**
**ALDEN, IOWA**

### WANTED

Service and Erection Representative having experience with Crushing, Cement and Lime Plant machinery.

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**c/o Pit & Quarry Publications**
**431 So. Dearborn St. Chicago 5, Ill.**

### Wanted—Quarry Manager

Experienced, capable man to manage new Quarry and Asphalt Plant, including the erection of same in Western New York area. Send full particulars to:

**Box No. PQ-102-M, c/o Pit & Quarry Publications, Inc.**
**431 So. Dearborn St. Chicago 5, Illinois**

**SUPERINTENDENT OF MAINTENANCE FOR CRUSHING AND SCREENING OPERATIONS**

Knowledge of crushers, screens, conveyors, and related equipment essential. Write, giving experience, education, references.

**Box No. PQ-108-J, c/o Pit & Quarry Publications**
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### QUARRY & MINING ENGINEER WANTED:

**Qualifications:** College degree or equivalent.

**Experience:** 10 Years in related fields. Knowledge and experience in Quarry Blasting, Hauling, Crushing both primary and secondary, also Ore beneficiation.

**Salary:** Comensurate with experience and ability.

**Location:** In Northern Ohio area, with progressive nationally known company.

All replies held in strict confidence.

*Reply to:*

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**NEW CONTINENTAL GIN TROUGHING IDLERS, TIMKEN BEARING-EQUIPPED**

5" dia. for 16" belt ..... $22.00 ea.
5" dia. for 20" belt ..... $23.00 ea.
RETURN IDLERS 20" belt ..... $11.00 ea.
PRICES FOB NEW YORK

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FOUNDATION TESTING
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Testing Limestone, Clays, Mineral Deposits
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***BULK MATERIALS HANDLING***
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*Operation*
*Plant Layout*
*Appraisals*

# $4,500,000 LIQUIDATION

## Titanium Dioxide Plant

### Broening Highway — Baltimore, Md.

**Telephone: MEdford 3-2911**

1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, ⅞" shell.
1—Vulcan 8' x 125' Rotary Kiln, 2 tires, ¾" shell.
2—Vulcan 8' x 50' Rotary Kilns, 2 tires, welded, ⅞" shell.
2—Vulcan 6' x 60' Rotary Kilns, 2 tires, ¾" shell.
1—Traylor 5' x 50' Rotary Dryer, 2 tires, welded.
1—Raymond No. 5057 Five Roll High Side Mill, Double Whizzer.
2—Abbe 5' x 16' Ball Mills.
4—Mikro Pulverizers, 3TH, 2TH.
5—Worthington, I.R., Compressors; 1000, 500 & 300 cfm.
2—Aurora 24" Vertical Centrifugal Pumps, 200 HP motors, 5000 gpm, 125' head.
1—Byron Jackson Deep Well Pump, 75 HP Vertical Motor.
8—Dorr Thickener Mechanisms; 50', 40', and 16'.

Steel Buildings; 20 ton Overhead Cranes; Bemis 50# Bag Packer with Sewing Machine; Bucket Elevators 65 to 125 ft. high; Redler Conveyors 5" and 10"; Screw Conveyors 6" and 9", etc.

***PARTIAL LIST OF VALUES • SEND FOR CIRCULAR***

***Representative on Premises for Inspection***

**BRILL EQUIPMENT COMPANY**

**2401 Third Avenue New York 51, N. Y. Tel.: CYpress 2-5703**

---

48"x60" Allis Chalmers Blake Jaw Crusher
14"x30" Austin Western Jaw Crusher
30"x36" Traylor Blake Jaw Crusher
10"x36" Buchanan Blake Jaw Crusher
12"x24" Buchanan Blake Jaw Crusher
10"x30" Power Blake Jaw Crusher
24"x36" Farrell 14B Blake Jaw Crusher
30"x42" Buchanan Jaw Crusher
18"x24" Universal Jaw RB Crusher
2—28"x36" Traylor Blake Jaw Crushers
2—36"x48" Traylor Blake Jaw Crushers
3—24"x54" Allis Chalmers Rolls
25"x36" Telsmith over head eccentric Jaw Crusher
18"x32" Ditto
9"x36" Ditto
10"x36" Ditto
2—28" Telsmith Intercone Crushers
36" Telsmith Gyrasphere Crusher
36" Symons Cone Crusher
10"x40" Good Roads Jaw Crusher
18"x36" Telsmith rolls, smooth shell
16" Telsmith Gyratory Crusher
25" Telsmith Gyratory Crusher
13" Telsmith Gyratory Crusher

**BLUE BALL MACHINE WORKS**
**Blue Ball, Pennsylvania**

---

## WANTED — DISCARDED

General Motors 51—71—110 Injector Parts

**HARRISON**
**2930 Woodhill Road**
**Cleveland 4, Ohio**

---

## SPECIAL SALE

1—80-ton BROWNING diesel Locomotive Crane. Standard Gauge. 50' boom. Perfect condition—has seen limited service. May be inspected under operation—Illinois shipping point.

**PRICE: $22,000.00**

**Box No: PQ-202-A, c/o Pit & Quarry Publications**
**431 So. Dearborn St. Chicago 5, Illinois**

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**OPERATIONS SUPERINTENDENT FOR MULTI-PLANT AGGREGATE PRODUCER**

Responsible for production, scheduling, etc. Salary commensurate with ability, experience. State age, education, references. Replies will be kept confidential.

**Box No. PQ-109-J, c/o Pit & Quarry Publications**
**431 So. Dearborn St. Chicago 5, Illinois**

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## *OUR 51ST YEAR*

Jeffrey Type A Hammermill 24"x18".
American 13SC Hammermill, 25 HP West.
Climax 10x20 Jaw Crusher 25 HP Motor.
Farrel 10x4 "C" Jaw Crusher w/motor.
Cedar Rapids 14x36 Overhead Ecc. Jaw Crusher, Bronze Bearings.
Colorado 20"x12" Double Roll Crusher.
New England 14"x28" Jaw Crusher.
Sturtevant #1½ Rotary Crusher.
Robins 18x24 Double Roll Crusher, Knobs.
Single Roll Coal Crusher, 24" D. x 30" F.
Reliance Jaw Crusher 9"x16"
Acme Jaw Crusher 9"x16"
25 Yd. Cedar Rapids Secondary Portable Crushing Plant.
Niagara 1-Deck Screen 2½'x12'
Hummer 1-Deck Screen 6'x5'
Hummer 2-Deck Screen 3'x4' Encl.
New Universal 1-Deck Screen 3'x5'
New Universal 1-Deck Screen 3'x8'
Seco 3½ Deck Screen 3'x8'
Revolving Screen 30"x19' lg. 4 sizes.
Revolving Screen 48"x20', trunnions.
Telsmith Ajax Gravel Washer, 40" dia.
Small Dust Elevators for Asphalt Plants, 5" and 6" Buckets.
Asphalt Dryer, 4'x35', Complete.
Sturtevant 20 HP Positive Pressure Blower.
Steel Grating for Walkways, 95% New.
25, 30, 40 and 50 H.P. Motors.
50 H.P. 100 R.P.M. Gear Motors.
Conveyor Idlers—All sizes and Makes.

**G. A. UNVERZAGT & SONS INC.**

**136 Colt Street Irvington 11, N.J.**
**Essex 3-8105**

---

## DEPENDABLE USED MACHINES

SPECIAL: Universal 880 Jr. Portable crushing plant powered by caterpillar 8806

| | | |
|---|---|---|
| P&H 255A backhoe | Unit 514 ½ yd. backhoe | Trojan LC-100 ¾ yd. loader |
| A-W ½ yd. shovel | Unit 614 ½ yd. backhoe | Eagle 24"x25' single screw |
| 60' portable conveyor | Hopto 105 for HD5 Hi-lift | Telsmith d.d. screen 5x14 |
| #25 Bay City ½ yd. hoe | Lorain 20 ton truck crane | Telsmith d.d. screen 5x16 |
| 35' Universal conveyor | Austin 8 ton Roller | Insley K-12 ½ yd. dragline |

This equipment rebuilt in our modern plant by expert mechanics. Come see it!

**10004 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Illinois**

---

## FOR SALE

An established sand and gravel business, consisting of two complete plants, in a well located part of Texas, with a lot of Highway construction and other building in progress. Business established in 1939.

**PQ-107-N, c/o Pit & Quarry Publications**
**431 So. Dearborn St. Chicago 5, Illinois**

---

## FOR SALE

1¼ yard slackline, 95 foot tower, 75 HP electric two speed hoist.

**Walkden Sand & Gravel Co.**
**522 N. Front Niles, Mich.**

---

## FOR SALE

Complete Crushing Plant, Acreage, Bldgs., Trucks, Scales, etc. R.R. Spur. High Calcium Limestone. Handling Phosphate, Redimix. No Competition. Missouri. Consider Trade Stock Ranch.

**Box No. PQ-204-A, c/o Pit & Perry Publications**
**431 So. Dearborn St. Chicago 5, Illinois**

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## FOR SALE

Package dry mix concrete plant includes bins, elevator, mixer, sewing machine, dryer and automatic scale.

**Box No. PQ-106-G, c/o Pit & Quarry Publications**
**431 So. Dearborn St. Chicago 5, Illinois**

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## PORTABLE - INEXPENSIVE - RUGGED

In 6", 8" or 10" up to 60' Chain Cutter
Agitators for your pumping or dredging needs

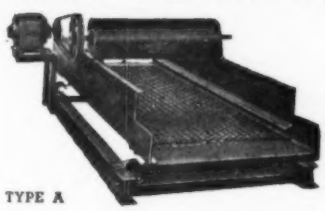
*Write or call for particulars*

**BERGLUND CHAIN CUTTER CO.**
**Clay Center, Kansas**

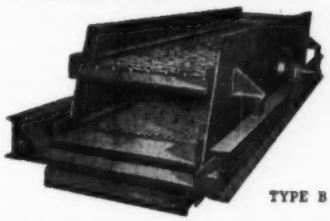
# BONDED QUALITY BARGAINS

**NEW CURRENT MODELS - IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES**

## BONDED ® GENERAL DUTY AND HEAVY DUTY VIBRATING SCREENS



TYPE A



TYPE B

For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

**PERFECT BALANCE AND SHARP ACTION.** Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086. #1086.**

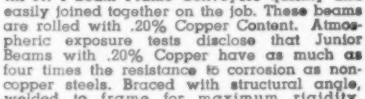
| Model Number | Screening Area | No. of Decks | Sale Price |
|---|---|---|---|
| 124A | 2'x4' | 1 | $ 443 |
| 224A | 2'x4' | 2 | 472 |
| 126A | 2'x6' | 1 | 472 |
| 226A | 2'x6' | 2 | 501 |
| 134A | 3'x4' | 1 | 504 |
| 234A | 3'x4' | 2 | 570 |
| 136A | 3'x6' | 1 | 581 |
| 236A | 3'x6' | 2 | 688 |
| 336A | 3'x6' | 3 | 958 |
| 138A | 3'x8' | 1 | 675 |
| 238A | 3'x8' | 2 | 815 |
| 338A | 3'x8' | 3 | 996 |

**FACTORY BALANCED, CONTROLLED VIBRATION.** Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14'. 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

| Model Number | Screening Area | No. of Decks | Sale Price |
|---|---|---|---|
| 336B | 3'x6' | 3 | $1629 |
| 436B | 3'x6' | 4 | 1685 |
| 138B | 3'x8' | 1 | 1510 |
| 238B | 3'x8' | 2 | 1620 |
| 338B | 3'x8' | 3 | 1735 |
| 248B | 4'x8' | 2 | 2310 |
| 348B | 4'x8' | 3 | 2440 |
| 2410B | 4'x10' | 2 | 2400 |
| 3410B | 4'x10' | 3 | 2550 |
| 2412B | 4'x12' | 2 | 2590 |
| 3412B | 4'x12' | 3 | 2970 |
| 4412B | 4'x12' | 4 | 3165 |

## BONDED ® TROUGHING IDLER CONVEYOR BARGAINS

**Remember, You Save Up To 50%**



**CONVEYOR PRICES INCLUDE BELTING**

Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2¼" or 2 7/16" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. **WRITE FOR BULLETIN #1138.**

Bonded troughing idler conveyors also available in Truss Frame Construction. **WRITE FOR BULLETIN #1189 AND PRICES.**

| Belt Width | Length of Conveyor | List Price | Sale Price | Add or Deduct Per Foot |
|---|---|---|---|---|
| 14" | 25' | $1397 | $ 722 | |
| 14" | 50' | 2222 | 1144 | $16.84 |
| 14" | 85' | 3377 | 1733 | |
| 16" | 20' | 1262 | 636 | |
| 16" | 45' | 2137 | 1088 | 18.04 |
| 16" | 80' | 3662 | 1359 | |
| 16" | 90' | 3712 | 1900 | |
| 18" | 25' | 1477 | 794 | |
| 18" | 45' | 2217 | 1186 | |
| 18" | 70' | 3142 | 1648 | 19.24 |
| 18" | 85' | 3697 | 1933 | |
| 18" | 100' | 4252 | 2220 | |
| 18" | 130' | 5362 | 2797 | |
| 20" | 25' | 1517 | 828 | |
| 20" | 60' | 2882 | 1533 | 20.37 |
| 20" | 75' | 3467 | 1838 | |
| 20" | 90' | 4052 | 2145 | |
| 24" | 25' | 1590 | 898 | |
| 24" | 45' | 2430 | 1330 | |
| 24" | 70' | 3480 | 1875 | 21.78 |
| 24" | 100' | 4740 | 2514 | |
| 24" | 120' | 5580 | 2950 | |
| 24" | 150' | 6840 | 3603 | |
| 30" | 50' | 2911 | 1617 | |
| 30" | 70' | 3871 | 2119 | 24.75 |
| 30" | 90' | 4831 | 2614 | |
| 36" | 25' | 1818 | 1118 | |
| 36" | 45' | 2858 | 1678 | 27.95 |
| 36" | 80' | 3638 | 2088 | |
| 36" | 100' | 5718 | 3214 | |

## BONDED BUCKET ELEVATORS

Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models mean lower prices and you get a Custom Built Elevator at no extra cost.

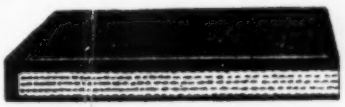
There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular slivery, or pellet shapes, hot or chemically active. A complete line of Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices.

**WRITE FOR BULLETIN #1203**

| Model No. | Bucket Size Inches | First 20' (Discharge Ht.) | Add or Deduct Per Ft. |
|---|---|---|---|
| **Style "A" Spaced Malleable Buckets on Chain** | | | |
| C53A | 5 x 3¾ | $1071.50 | $20.25 |
| C64A | 6 x 4 | 1088.50 | 21.00 |
| C85A | 8 x 5 | 1235.00 | 25.50 |
| C106A | 10 x 6 | 1281.00 | 27.50 |
| C127A | 12 x 7 | 1510.00 | 31.25 |
| C148A | 14 x 8 | 1673.50 | 36.00 |
| **Style "A" Spaced Malleable Buckets on Belt** | | | |
| B53A | 5 x 3½ | $1099.00 | $20.50 |
| B64A | 6 x 4 | 1116.50 | 21.25 |
| B85A | 8 x 5 | 1311.50 | 27.25 |
| B106A | 10 x 6 | 1692.50 | 33.00 |
| B127A | 12 x 7 | 1854.50 | 37.25 |
| **Style "E" Continuous Steel Buckets on Chain** | | | |
| C85E | 8 x 5 x 7¾ | $1397.00 | $31.25 |
| C126E | 12 x 6 x 11¾ | 1589.00 | 34.25 |
| C108E | 10 x 8 x 11¾ | 1604.00 | 34.75 |
| C128E | 12 x 8 x 11¾ | 1624.00 | 35.50 |
| C148E | 14 x 8 x 11¾ | 1710.00 | 36.75 |
| **Style "E" Continuous Steel Buckets on Belt** | | | |
| B85E | 8 x 5 x 7¾ | $1727.50 | $34.50 |
| B116E | 11 x 6 x 8¾ | 1839.50 | 38.75 |
| B128E | 12 x 8 x 11⅛ | 2013.00 | 43.50 |

## TESTED CONVEYOR BELTING AT NEW LOW PRICES

**WE PAY FREIGHT ON 200 POUNDS OR OVER**



**Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.** Heavy Duty 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

| Width | Ply | List Price Per Ft. | Sale Price Per Ft. |
|---|---|---|---|
| 14" | 4 | $3.83 | $2.63 |
| 16" | 4 | 4.08 | 2.77 |
| 18" | 4 | 4.51 | 3.06 |
| 20" | 4 | 4.97 | 3.54 |
| 24" | 4 | 5.85 | 3.97 |
| 30" | 4 | 7.18 | 4.85 |
| 36" | 4 | 8.51 | 5.76 |

**Major Bee Brand: 18# to 19# Average Friction Pull. 2500# to 3000# Average Cover Tensile. Skim coat between plies.**
A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

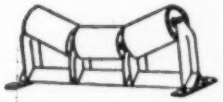
| Width | Ply | List Price Per Ft. | Sale Price Per Ft. |
|---|---|---|---|
| 14" | 4 | $4.31 | $2.85 |
| 16" | 4 | 4.85 | 3.22 |
| 18" | 4 | 5.39 | 3.57 |
| 20" | 4 | 5.90 | 4.07 |
| 24" | 4 | 6.94 | 4.60 |
| 30" | 4 | 8.53 | 5.66 |
| 36" | 4 | 10.09 | 6.84 |
| 24" | 5 | 8.14 | 5.38 |

***All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

Other widths, plies, duck weights and cover thickness available at low prices. **WRITE FOR FREE SAMPLE AND BULLETIN #1223.**

## BONDED IDLERS & RETURN ROLLS

### SAVE 25% AND MORE



| | | | |
|---|---|---|---|
| 3-roll, 5" diameter Troughing Idlers for: | | | |
| 14" belt | $18.50 | 24" belt | $21.25 |
| 16" belt | 19.25 | 30" belt | 22.00 |
| 18" belt | 20.50 | 36" belt | 22.75 |
| 20" belt | 20.75 | 48" belt | 25.50 |
| 1-roll, 5" diameter Return Idlers for: | | | |
| 14" belt | $7.25 | 24" belt | $ 8.50 |
| 16" belt | 7.50 | 30" belt | 9.50 |
| 18" belt | 8.00 | 36" belt | 10.00 |
| 20" belt | 8.25 | 48" belt | 11.50 |

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. **WRITE FOR BULLETIN #1138.**

# BONDED SCALE AND MACHINE COMPANY

**PHONE Days: Hickory 4-2186** — **WRITE FOR FREE CATALOG AND PRICES** — **PHONE Evenings: AX. 1-2213, HU. 6-3156**

**110 BELLEVUE** — **Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders** — **COLUMBUS 7, OHIO**

## EQUIPMENT LOCATED

GA. - N. Y. - CALIF. - OHIO - TEXAS - ILL.

**AIR COMPRESSORS**

1—3800 & 3—3078 CFM Inger. Rand. 2300 V
5—1372 CFM Gardner Denver 2300 V
3—676 CFM-Inger.-Rand 40T-440 V

**DIESEL LOCOMOTIVES**

8—Gen. Elec. 25 ton, 44 ton, 70 ton & 80 ton
3—Whitcomb 65 ton—1-115 ton G.E.
5—Gen. Motors, 100 ton
1—6 ton 1—8 ton Brookville, 30 ton Plymouth

**STEEL SHEET PILING**

1500 ton ZP 38—ZP 32 DP 2—AP 3—20' to 65'.

**STEEL DERRICKS**

Guy: 3 ton 85 ft. Boom, 25 ton 60 ft. Boom, 15 ton 100' Boom, 29 ton 115' Boom, 50 ton 100' Boom.
Stiff Leg: 5 ton 70 ft. Boom, 15 ton 100 ft. Boom, 25 ton 100 ft. Boom, 75 ton 135 ft. Boom. 1—5 ton 100 ft. Boom.

**RAILWAY CARS**

177—Dump Std. Ga. 20, 16, 12, 6 & 4 yd.
36—Flats—10 ton, 40 ton, 50 ton cap.
44—Tank Cars—8,000 & 10,000 Gal. Cap.
75—V Dump Cars, 1½ & 2 Yd.

**GRINDING MILLS**

10000 lbs. 1½ in. Steel Grinding Balls
Ball Mills—4'6"x 9', 6'7"x 6', 6'x 10', No. 77 and 6'6" x 14'6"
Hardinge Mills—7' x 48" and 10' x 36"
5' x 22" Hardinge Ball Mill, with Air Separator complete
Rod Mills—3'x 6', 3'x 8', 4'x 8', 5'x 10', 8'x 12'
Tube Mills—5'x 22', 6'x 22', 6'x 6"x 21' & 7'x 18"

**HAMMER MILLS**

Jeffrey—15"x8", 24"x18" and 42"x36"
Cedar Rapids 5360H and 3030 Double Impeller Impact Breaker
2—Penn CF-5-35 Impactors

**JAW CRUSHERS**

Blake Type 56"x72", 48"x60", 36"x42", 40"x42", 36"x48", 30"x42", 30"x36", 12"x24", 48"x60"
Single Shaft 30"x42", 25"x40", 24"x36", 20"x36", 18"x24" and 10"x24"
Cam and Roller 16"x32", 14"x26", 11"x26", 10"x20" and 6"x20"

**GYRATORY FINE REDUCTION**

Symons 20", 3', 4' and 4½' stand and 2' Shorthead
Kennedy 19S, 25S, 37S and 38½S
Sup. McC. 6", 10" and 18"
Traylor 3 and 4' Type TY

**GYRATORY PRIMARY**

6", 10", 14", 16", 26" and 36" Sup. McC.
2, 4, 5, 6, 7½, 8, 9, 12 Allis-Chalmers Gates Style K
Telsmith 25B

**ROTARY DRYERS AND KILNS**

Dryers—4'x20', 5'6"x50', 6'x50', 5'x30'
Kilns—33"x18', 7'x120" & 6'x125'

**WASHERS—CLASSIFIERS**

2—16' Sturtevant Air Separators
2—36" x 25' Double Screw Fine Material Washer-Classifier-Dehydrator
4—78"x36'x6" Duplex Akins Spiral Classifier
Telsmith 20"x15' Twin Screw Sand Classifier and Size 10 Sand Tank
Eagle 20"x15' Single Screw Coarse Material Washer-Dewaterer
McLanahan—10"x30' and 12"x30' Log Washers

**CEDAR RAPIDS SECONDARY PORTABLE CRUSHER**

Model 2A, 24"x16" Rolls, 3'x8'—1½ Deck Screen, Roto elevator, 4 conveyors, gasoline engine on pneumatic tires

**VIBRATING SCREENS**

5'x12' Allis-Chalmers "Ripl-Flo" 3 Deck

**FEEDERS**

Syntron Model F55 Grizzley Feeder
54" x 16" S-A Heavy Duty Feeder
4—Roll Crushers, 42x16, 40x22, 24x16 & 18x30
3—Single Drum Electric Hoists
3—200 HP and 100 HP Ottumwa Single Drum

IDLE PLANTS BOUGHT

**R. C. STANHOPE, INC.**
60 E. 42nd St., New York 17, N. Y.
Tel.: MU 2-3076

## FOR SALE

**AIR COMPRESSORS—ELECTRIC**

400 H.P. CHICAGO PNEUMATIC 24" x 12½" x 17": NEW 1950; 2000 cfm; 440V; Synchronous motor 100# PSI
300 H.P. CHICAGO PNEUMATIC 24" x 14" x 18"; 100# PSI; 4160 volt synchronous motor.

**AIR COMPRESSORS STEAM**

INGERSOLL RAND 2 STAGE: 27½" x 17" x 20"; 2480 cfm at 200 RPM; 125 F steam pressure. New 1950

**AIR COMPRESSORS—HIGH PRESSURE**

2—125 H.P. INGERSOLL RAND Synchronous, 440V; 230# discharge pressure.
1—125 H.P. WORTHINGTON 9¼" x 13" Synchronous; 440V; 230 PSI discharge.

**CONVEYORS—"NO LEAK" STEEL SLAT**

3—42" x 190' 1—42" x 49' 1—42" x 78'
1—42" x 177' 2—42" x 16'-6"

**CONVEYORS—OSCILLATING PAN**

3—LINK BELT 48" x 141'
1—LINK BELT 36" x 86'-3"
3—LINK BELT 36" P.A. 14,000# 20' & 35' length

*WRITE—WIRE—PHONE*

**ACME EQUIPMENT CO., INC.**
126-128 So. Clinton St. ANdover 3-3430 Chicago 6, Ill.

## 54-B

Bucyrus Erie Dragline Crane, 85' boom, 2½ yd. drag bucket, Buda diesel, light plant, Ind. boom hoist, new 1952. Ex. condition.

**Frank Famalette Equipment Co.**
P. O. Box 325
Hazleton, Pa. GL 5-4708

## FOR SALE

Model 492 Marion Electric Shovel, Serial Number 8789, powered by 150 h.p., 4160 volt induction motor, driving motor generators. 3 cubic yard digging bucket and also 5 cubic yard coal bucket. A-1 condition. Located in Eastern Ohio.

**THE STANDARD SLAG COMPANY**
1200 Stambaugh Building
Youngstown, Ohio
Riverside 3-3151

## FOR SALE

All electric sand and gravel plant complete with DU3000 power plant, washers, screens, conveyors, feeders, motors. Price $18,500.00; new 6" Fremont Gravel pump, $1,000.00.
Wanted: Screen 3x6, 8 or 10, single, 2 or 3-deck.

**Blue Ribbon Sand & Gravel Co.**
Oskville, Iowa

## LIGHT WEIGHT AGGREGATE PLANTS

RESEARCH — PLANNING — DESIGN
ROCK CRUSHING — SAND AND GRAVEL PLANTS

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One—Caterpillar RD-7 In Excellent Operating Condition, Equipped with Two Joy Radial 4" Drills. Ideal for Quarry Drilling Rig. Price FOB Nashville, Tennessee **$3,500.00.**

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COMPLETE Crushed Stone plant located in North Central Tenn. 3240 Universal Impact Master with feeder and steel hopper, #4 Universal hammermill, 75A Michigan Loader, 3 steel bins (25 ton), 5x14 Simplicity 3 deck screen with ball trey, 315 Cu. Ft. IR compressor, wagon drill, jackhammers, conveyors (4) with belts, electric motors with compensators and starters, all necessary wiring. For details or inspection *contact*—

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| Koehring | "304" | ⅝ yd. Diesel Shovel, GM power, 24" tracks, 12'9" crawlers.* |

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| Pettibone | "125" | **Used** Speedall 1½ yd. Tractor-Shovel, 4-wheel drive, Torquematic Transmission, Cab, Hard Rock Lug Tires, Hercules gas. New 8/57. |
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| Ford | | R.T. Ind. Tractor w/Dearborn Front End Loader. |
| Barber-Greene | | "552" Crawler-Mounted Bucket Loader. |
| M-M | "RTI" | **Used** Ind. Tractor w/Lull "4A" ½ yd. Hyd. Controlled Bucket. |

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| | | |
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| Rex | 5½ Yd. | Mixer, new May 1952, w/ Chrysler gas power, single compartment water tank, "302" transmission, front water entry S.N. TW-322, open end, un-mounted. |
| Jaeger | 5 Yd. | Mixer, new '55, w/Continental gas power, flush tank, open end, S.N. J16913. Sandblasted, steam cleaned & repainted, un-mounted. |
| Smith | 4½ Yd. | Mixer, Ford V-8 power, open end, rear water entry, with Dynachute, mounted on Int. "LF190" Tandem Truck — 9.00 x 20 tires (fair). |
| Rex | 3½ Yd. | Mixer, Chrysler gas power, 125 gal. mixing tank, front water entry, sealed door, new 1950. S.N. TD1850. Mounted on '53 IHC "LF174" w/tandem axles. |
| Smith | 4½ Yd. | Mixers (2), sealed door, Continental gas power, un-mounted. |
| Jaeger | 2 Yd. | Mixer, un-mounted. Buy It for parts. Make offer. |
| Jaeger | 3 Yd. | Mixer, S.N. J3752, mounted on Chev. tandem axle truck. |
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1—36" Telsmith Gyrasphere Crusher plus many repair parts
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| 1 Telsmith Standard Apron Feeder, 42" x 12' Shop #4789 | 1,000.00 |
| 1 5' x 12' Triple deck Telsmith Vibrating Screen Shop #4632 | 2,500.00 |
| 1 15 H.P. Sterling Electric Motor 220/440 Ser. #4163FEC (Power for 5 x 12 Screen) | 300.00 |
| 3 3' x 10' Double Deck Telsmith Vibrating Screens, Shop No.'s 483-484-4226. All with 10 H.P. Electric Motors ea. | 1,000.00 |
| 1 3' x 8' Double Deck Telsmith Vibrating Screen, Shop #4254 with 10 H.P. Electric Motor | 800.00 |
| 1 Pennsylvania Impactor CF-9-38 Serial #1642. Impact Type Secondary Crusher | 1,200.00 |
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1—Link Belt 24" Troughing Belt Conveyor 160' c.c.

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1—Ruggles Cole 5' x 30' Double Shell Rotary Dryer.

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OSGOOD mdl. 820 Shovel, 1½ cy., #6246, new 1953, used only 1600 hrs. Like new. Cat. diesel, air controls. $25,000 Rental Purchase. Dragline attachment available. Yard.
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P&H 655 Shovel Buckets, 1½ cy, new, fit other makes. $850 Yard.
CEDARAPIDS ROCK-IT PORTABLE CRUSHING PLANT w/2225 rb. Jaw, apron feeder, 3033 hammermill, 4x10 screen, conveyors, twin GM diesel, on tandem rubber. Capacity 75-100 tph producing 1" minus. Late model, excellent. Less ⅓ price. $29,500.00 Yard. Rent $1500/mo. apply purchase.
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CEDARAPIDS 30x42 Portable Impact Plant w/feeder, pwr., conv., tand. rubb., ovrhld., $28,500.
CEDARAPIDS 2036 rb. Jaw Crusher, new brgs. Excellent. $6250 Yard.
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| 800 | G.E. | Slip Ring | 1190 | 440 |
| 500 | G.E. | Sq. Cage | 900 | 2200 |
| 400 | Whse. | Slip Ring | 440 | 440 |
| 400 | G.E. | Slip Ring | 700 | 440 |
| 300 | Whse. | Slip Ring | 250 | 2300 |
| 250 | Whse. | Slip Ring | 500 | 440 |
| 200 | G.E. | Slip Ring | 720 | 440 |
| 150 | A.C. | Slip Ring | 580 | 440 |
| 150 | Whse. | Sq. Cage | 1750 | 2200 |
| 150 | G.E. | Sq. Cage | 900 | 440 |
| 100 | G.E. | Slip Ring | 570 | 220/440 |
| 100 | A.C. | Slip Ring | 865 | 220/440 |
| 75 | Wagner | Slip Ring | 850 | 440 |

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625 Page Diesel Drag, 150', 10 yd.
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621-S Page Diesel Drag, 128', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
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Two—54-B electric SHOVELS, each .....$26,500
Lima 802 SHOVEL, new 1948, parts .....$24,250
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Crushers: jaw; cone; gyratory; roll; hammermill; impactor; ball, rod & tube mills; screening, crushing & washing plats — Classifiers — Compressors — Conveyors — Cranes — Drills — Dump Cars — Dredges — Engines & Motors — Feeders — Generators — Hoists — Kilns & Dryers — Locomotives — Pumps — Screens — Shovels & Draglines — Transformers — Euclid Trucks.

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315 CFM Portable Air Compressors
4½' x 35' & 8' x 170' Rotary Dryers
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20 x 36 & 36 x 48 & 42 x 48 Jaw Crushers
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5' x 12' & 2' x 6' Screens
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10 - 50 - 60 - 100 - 150 - 200 - 300 HP Boilers

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WOodward 6-4073



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**UNION MINING COMPANY**

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ATlantic 1-9980



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MORSE 10" intake, 8" outlet Sand & Gravel Pump, 3 yrs. old, used 6 mos., complete with barge, boom, winch, all electric power, new cost over $20,000.00—our price $11,000.00.

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VErmont 7-0366



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7—63TD 22 ton rear dumps.
9—60TD 22 ton rear dumps.
New 1956.
PRICED TO SELL.

**FRANK FAMALETTE EQUIPMENT CO.**

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Cedarapids 3042 double impeller. Rebuilt.
Cedarapids 3033 hammermill with new components.
Cedarapids 3033 hammermill secondary plant on rubber.
Cedarapids 2036 primary crushing plant.
Cedarapids 1236 twin jaw crusher. Excellent.
Cedarapids 1236 twin jaw portable plant.
Telsmith 13B gyratory crusher.
Scottdale model 88 double roll coal crusher.
26"x8'6" apron feeder with drive.
Robins 4' x 9' triple deck screen.
New Holland 6' x 12' double deck screen. Rebuilt.
Pioneer 4' x 8' double deck screen. Rebuilt.
27½ ton, single-compartment 8' x 12' bin.
2—Eagle 36"x20' double log washers. Good.
Wemco 24"x13' sand preparation machine. Good.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two-compartment, 13' x 23' bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conv. belting

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Lorain L-820, 2-yd. diesel shovel-crane.
P&H 855B-LC 2-yd. diesel dragline.
P&H 655B 1½ yd. diesel dragline. Reconditioned.
Lorain L-79, 1½-yd. diesel shovel. Rebuilt.
Bucyrus-Erie 38B, 1½-yd. diesel dragline. Rebuilt.
Lorain L-41 ¾-yard diesel backhoe. Reconditioned.
Lorain L-50H, 1-yd. diesel crane. Excellent.
Lorain L-26, ¾-yd. diesel dragline. Excellent.
2—Lorain L-26, ¾-yd. diesel backhoes. Excellent.
Lima 34 Paymaster ¾-yard diesel shovel. Good.
Unit 1020 ¾-yd. diesel powered shovel-crane.
Koehring 304 ¾-yd. diesel shovel.
Koehring 304 ¾-yd. diesel backhoe.
Wayne 50B, 25-ton truck crane, 18 mos. old.
Unit 614, ½-yd. diesel backhoe. Good.
Lorain MC-41 20-ton Moto-Crane. Reconditioned.
Lorain TL-26 ½-yd. Diesel Backhoe.
Link Belt HC-90 25-ton truck crane.
Lorain MC-50W 25-ton Moto-Crane.
Lorain MC-4 15-ton gas Moto-Crane.
Lorain TL-26 16-ton gas Moto-Crane.
Lorain SP-102, 7-ton, self-propelled Crane

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4—Euclid T8-24 twin engine scrapers.
2—Euclid T8-18 twin engine scrapers.
4—Euclid 18-yd. overhung engine scrapers.
2—Euclid 12-yd. overhung engine scrapers.
3—Euclid 7-yd. overhung engine scrapers.
1—Euclid 15½-yd. six wheel scraper.
2—Euclid 12-yd. bottom dumps. Good.
2—Euclid TC-12 twin engine tractors.
1—Euclid 18TD, 15-ton rear dump.
1—Mack LR6 15-ton rear dump. Rebuilt.
1—Pullman 8-600, 6 to 8 yard scraper.
1—Caterpillar DW-10 hydraulic scraper.
1—International TD-14A tractor with PCU.
1—International TD18 with cable bulldozer blade.
1—Euclid tractor with 3200 gal. water tank semi-tlr.
1—Caterpillar D-8 with hydraulic angle dozer blade.
1—Caterpillar D-7 with hydraulic angle dozer blade.
1—Caterpillar D-4 TRACTOR ONLY.
1—International 300 tractor, with loader, backhoe.
1—Allis Chalmers HD-19 tractor with cable bulldozer blade.
1—LaPlante Choate 13¼-yd. cable scraper.
1—Ateo H85; 10¼-yd. Hydraulic Scraper.
1—Hough H90 gas front end loader. Reconditioned.

**SHOVEL ATTACHMENTS**

Lorain 50, 1½yd. 21' boom, 17' stick.
Lorain 30A, ¾-yd., 16' boom, 13'4" stick.
Osgood 903, 2-yd., 24' boom, 20'6" stick.

**BACKHOE ATTACHMENTS**

Lorain 40A, 18' boom, 7' stick, 28", 36" or 44" bucket.

**DIESEL POWER UNITS**

Cat. D7700, 74 H.P. at 1000 PFM. Rebuilt.
Cat. D8800, 88 H.P. at 1000 RPM.
Cat. D13000, 128 HP. at 1000 RPM. Rebuilt.
GMC Twin Diesel, rebuilt.
GMC 3021C, 3-cylinder, new.

**AIR COMPRESSORS**

105 cu. ft. Ingersoll-Rand, Waukesha power.
4—600 cu. ft. Gardner-Denver diesel portables.

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Camp Hill, Pa.
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Rotary Kilns & Dryers - Portable Crushers
Diesel & Gas Locomotives & Cranes
Air Compressors & Derricks
Cone, Roll, Jaw & Gyratory Crushers

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11' x 155' Traylor, ¾" shell, kiln
8' x 170' kiln, ¾" shell, (3) tires
8' x 125' Vulcan kiln, 1" shell
8' x 115' brick-lined kiln, ½" shell
8' x 50' Vulcan kiln, ¾" shell
7' x 120' brick-lined kiln, 9/16" shell
6' x 60' Vulcan kiln, ¾" shell
8'8" x 70' Double-shell, Hardinge #XA-18, indirect-direct dryer, ½" shell
7' x 80' Vulcan stone dryers
6' x 50' Louisville steam-tube dryers
6' x 30' Louisville steam-tube dryers
6' x 24' rotary dryer, ⅜" shell
5'6" x 50' Renneberg, ⅜" shell
5'6" x 31', 4'8" x 33', ½" shell
5' x 50' Traylor, 7/16" shell
4'6" x 40', 4'6" x 32', ⅜" shell dryers
4' x 24' brick-lined rotary kiln

### MILLS

ROD, Marcy 7' x 15', 4" liners, 300 HP
ROD, Marcy 8'6" x 12', cpd, 4" liners
ROD, Denver, 4' x 19', 60 HP
CONICAL BALL, Hardinge 4'6" x 16", 25 HP, w/bucket elevator, screens, etc.
BALL-TUBE, Allis-Ch. 5'6" x 22', 150 HP
BALL-TUBE, Allis-Ch. 6' x 16'
BALL, Marcy #66, 64½, 125 HP
BALL, Denver 4' x 10'; 60 HP
HAMMERMILL, Penna. Crusher #5060, 400 HP, non-clog, 1952, unused
CONICAL, Hardinge 10' x 48", 8' x 36"
COMPEB, Allis-Ch. 7' x 24', 450 HP, (Can be converted to rods)

### CRUSHERS-PULVERIZERS

GYRATORY, Kennedy #49S, 38½, 37½, 19½, 14, gearless
DOUBLE ROLL, 24" x 24" smooth roll, 20 HP, 1954 (like new)
CONE, Symons 7', 3' Standard
JAW, 18" x 9", 20" x 6"
ROLLER, Raymond #15, 6-roll, 66" dia., 200 HP, low-side (low price)
ROLLER, Raymond #3036, 3-roll, hi-side
PULV., B & W Type E-32, 75 HP
RING ROLL, Sturtevant, 14" x 9½", 40 HP
SAWTOOTH, Robinson #13, 15 HP

### MISCELLANEOUS

BOILERS, Keeler 200 HP, 160 PSI
CONVEYOR, 18" & 24" trough rubber-belt, 500' long (all-steel)
BRIQUETTING PRESSES, Komarek-GREAVES 75, 50, 10 HP
BUCKET ELEVATORS, 62' & 90' c-c
SCREENS, 4' x 6', 4' x 8'
PUG MILLS, 150, 50, 25 HP
COMPRESSOR, Gas turbine, 21,500 cfm Pos. Disp.
APRON FEEDERS, 36" & 48" wide
STORAGE BINS, welded steel, conical bottom, 6,000-80,000 gal.
BUCKETS, ¾ yard clam-shell

**PERRY EQUIPMENT CORPORATION**
1414 N. Sixth St. Phila. 22, Pa.
POplar 3-3505


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**FOR SALE or RENT**

65 ton Whitcomb diesel elec. loco.
44 ton Gen. Elec. diesel elec. loco.
25 ton Whitcomb diesel elec. loco.
30 ton Browning diesel loco. crane
50 ton American guy derrick 115' mast, 100 boom.
90 HP Lidgerwood 2d diesel hoist.
2 yd. Manit. 3000B crane. Cummins diesel.
2½ yd. Link-Belt K-595 crane. 120' Bm.
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5 yd. Bucyrus 120B elec. dragline.

**WHISLER EQUIPMENT CO.**
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

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**Your Best Investment**

POWER EQUIPMENT CO.
Offers
**BARGAIN PRICES** ON
GUARANTEED
NEW and Rebuilt MOTORS!

**JANUARY SPECIALS**
GUARANTEED REBUILT MOTORS
220/440 V. 60 Cycle—3 Phase

| HP | Make | Type | Speed |
|---|---|---|---|
| 500 | L.A. B.B. Spl. 440v | FX-1465 | 3600 |
| 400 | West. S.B. Spl. | CS-39B | 720 |
| 150 | M'thon. B.B. Drip | TDA-584 | 1800 |

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Cash for your surplus new & used electric equipment. Send your list today.

Large line of motors, control equipment, AC & DC Generators, MG sets and transformers.

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8 Cairn St., Rochester 2, N. Y.
Phone BEverly 5-1662

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8'8"x70' Ruggles Cole Rotary Dryers
7'x60' Rotary Dryer
5'x40' Rotary Kiln with 2' Cooler
6'x50' & 6'x25' Rotary Dryers
705-24 & 502-16 Roto Louvre Dryers
Jeffrey Hammermills, 24"x18" to 15"x8"
4'x6' & 4'x8' Tyler Hummer Screens
18" & 24" Troughing Belt Conveyor
Banbury 3A Mixer

*Send for Cat 1058*

**HEAT & POWER CO., inc.**
**ROCK PROD. EQPT. DIV.**
**60 East 42nd St., New York 17, N. Y.**
**Telephone: MUrray Hill 7-5280**

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22 B. Bucyrus-Erie Shovel Front—Like new. 6000 lb. Wrecking Ball—Pear Shaped—new 1955 Terratrac Model 500 W/hydraulic Dozer, excellent condition. *Terms:*

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**Fillmore 3-4775**
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**Chestnut 8-4493**

## USED EQUIPMENT

**SYMONDS CONE CRUSHER**
4' standard coarse, with spare shaft assembly, spare head, and spare mantle.

**BELT CONVEYORS**
30" wide, 400' long, 25 hp motor.
30" wide, 275' long, 25 hp motor.

**MARCY ROD MILL**
3' x 6' trunnion discharge, excellent.

**GYRATORY CRUSHER**
Allis Chalmers, type 8-K gates, 16".

**KENNEDY VAN SAUN BALL MILL**
3' x 6', Air swept, rotary vane feed

**ROLL CRUSHERS**
1 Traylor "AA", 54" x 24" with individual motors on each roll, all controls, excellent condition.
2 Superior, 36" x 16", each roll has individual motor. Many spare parts.
1 Traylor "A", 30" x 16", motor and controls.

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2 1500 KVA GE 24C0/4160 pri. 480 sec
3 1000 KVA GE 13,200 pri, 600 sec many others in stock.

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1—200 KVA West 3 phase 220/440 volts.
2—50 KW Elect Mach. 3 phase 220/440 volts.

**MOTORS—GEARMOTORS—SPEED REDUCERS**
From 1 hp to 1400 hp. Send for list.

**L. J. LAND, INC.**
**Weehawken, N. J.**
**P. O. Box 689** **UNion 4-1010**

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3—25-ton GENERAL ELECTRIC Diesel Electric Locomotives. Standard Gauge.
3—8-ton BROOKVILLE locomotives, Std. Ga.
1—6-ton WHITCOMB locomotive, 24" ga.

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GROVETON, PA., Box 43-P, Sub. of Pittsb.
CHICAGO 4, ILL., 327P So. La Salle St.
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SPECIALS: 12 RR Tank Cars 1100 to 10520 gal. 8" Dredge 2036, 2236 Port. Crushing, 125 TPH Washing Plants.
CRUSHERS: 1021, 1536, 2036, 2236, 2436, 3042, RB. 816, 2250, 3042, 3648, 4042 Blake JAW; 12B, 25B, 32B, 28", 36", 48" Telsmith. 1'x8", 2'4", 20" & 4' Traylor. 10, 16, 18, 20, 36" McCully. 9K & 12K. 322, 636 Allis GYR. 2' & 3' CONES.
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8' x 48" Hardinge SCRUBBER. Eagle 24x25 Screw.
DRYERS: 2½x36, 4x20, 4½x35, 5x40, 6x50, 8x70.
KILNS: 6x50, 8x124, 8x9x100, 8x170.
CONVEYORS: 24" up to 360', 36x151, 42x160.
MILLS: 4½x16", 6x18", 7x36" Hardinge. 6x15' Ball. Raymond 5057 & 66" Roll. CR 3033.
Noble CA506 Batch and R.K. Ready Mix Plants.
Diesel GEN. SETS 200 KW, 300 KW, 938 KW.
Lima 40T. NC504W TRUCK CRANES.
SHOVELS: Koehring 605 & 1005. Mich. 12B. Marion 111M, NW6, 25, 80D. Lorain 820, RB 38B, 41B, 54B, 120B, 200W, 9W. Manitowoc 1500.
**MID-CONTINENT EQUIPMENT CO. INC.**
8321 Gannon St. Louis 24, Mo. Wydown 1-2826

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**DOWN TO 65° BELOW ZERO**

Starting a cold engine without SPRAY STARTING FLUID is costly. Constant wear of the starting system . . . wasted man hours . . . equipment down-time . . . repeated engine strain, can be prevented with a pressurized can of SPRAY STARTING FLUID. It's so easy to use! Apply SPRAY STARTING FLUID into the air cleaner or intake air stream while cranking the engine. Continue spraying until the engine runs smoothly. Use SPRAY STARTING FLUID regularly for quick, easy and economical starting of diesel and gasoline engines. Start every work day with SPRAY!

*Until the engine reaches normal operating temperature it is a cold engine.

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P. O. Box 844 • Camden 1, New Jersey

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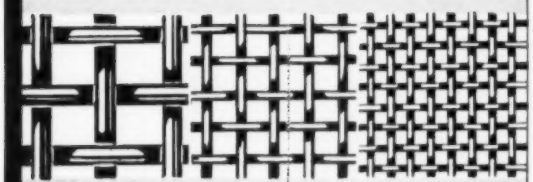
**NAT-ALOY**
***Woven Wire Screens***



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**WE OFFER NOW . . . SUPER NAT-ALOY**
**OIL TEMPERED WOVEN WIRE CLOTH**
★ GREATER RESISTANCE TO ABRASION
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252 W. Fairfield Ave., St. Paul 1, Minnesota

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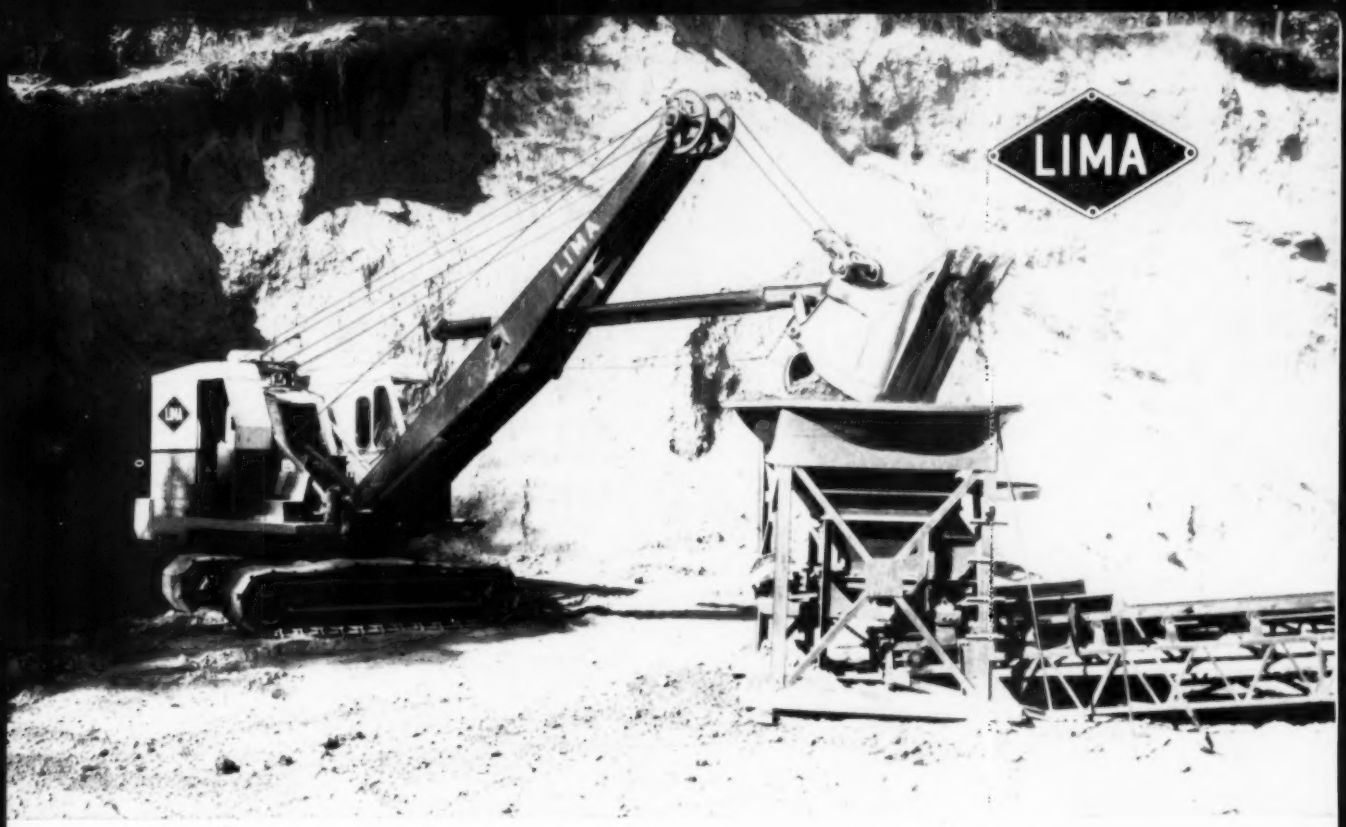


Crawler-mounted Lima Type 44 1-cu. yd. shovel loads sand and gravel into automatic feeder of Lima Austin-Western 101-SE Crushing and Screening Plant.

# High output LIMA 44 shovel daily feeds over 1000 yards to portable crusher

"It takes a lot of digging to keep pace with a crusher plant that chews up over 1000 cu. yd. of gravel and rock daily," says John G. Yerington, Benton Harbor, Mich., contractor.

### Lima works hard

"We get a lot of work out of our Lima 44 shovel. It works hard under rugged conditions, yet maintenance is low and we've had very little downtime with it.

"It has the built-in quality features you expect of Baldwin-Lima-Hamilton equipment. Besides the Lima 44, I have five Lima Austin-Western crushing and screening plants, plus three Austin-Western graders, five A-W rollers and an A-W hydraulic crane."

The Type 44 can be used interchangeably as a 1-yd. shovel, 25-ton crane, dragline or pullshovel. Available with crawler, truck or wagon mounts. Gas or diesel engine—torque converter is optional. Boom assembly or disassembly extra easy with pin or butt connections. Low gravity center. Large free-acting clutches—easy to operate and adjust.

### Minimum Maintenance

Type 44, like all Limas, is designed and quality built to outperform with minimum maintenance requirements. Let a Lima tackle your toughest job. There's a type and size just right for your needs. Cranes to 110 tons, shovels ½ to 6 cu. yd., draglines variable.

Contractors everywhere are sold on Limas. Find out why! See your nearest Lima distributor or write to us now. You'll profit with Lima!

Lima Austin-Western portable 101-SE Crushing and Screening Plant teams with Lima Type 44 shovel for high daily production.

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**LIMA** Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

596

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

BALDWIN BLH LIMA-HAMILTON

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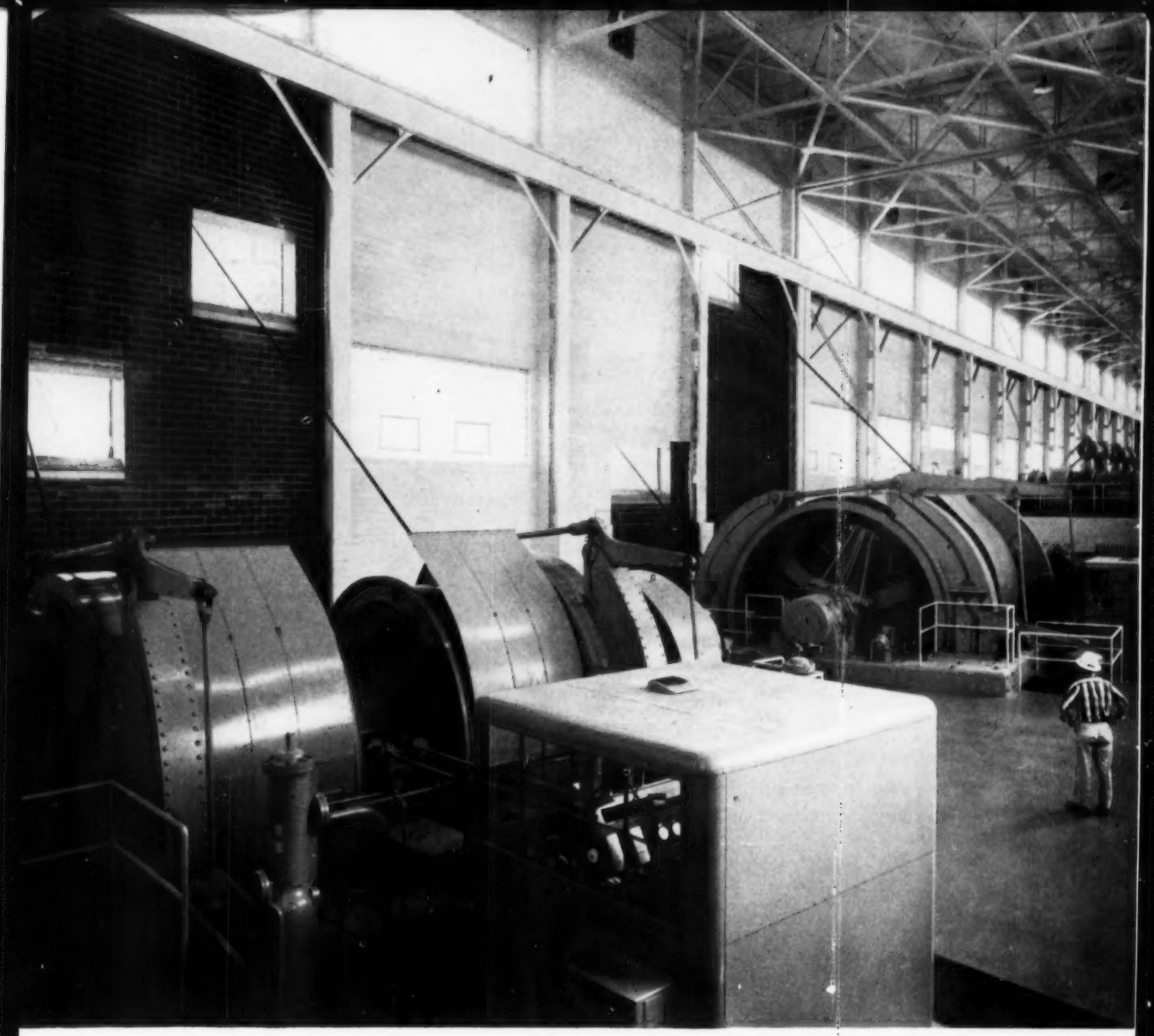

**Powerful Hoisting Equipment for 2250-ft Shaft.** Visible in this neat, efficient layout are hoists for a man-and-materials cage and balanced skips. They're part of the surface equipment of an Eastern iron-ore mine where good housekeeping is a fundamental rule. The shaft served by this installation is approximately 2250 ft deep; circular in shape, it has a diameter of 21 ft 6 in.

The skips, each of 20-ton capacity, operate at 2500 ft per min. The cage can be run at better than 1400 ft per min. Ropes for the hoists are Bethlehem flattened strand, Type H construction, with lang lay and fiber core. Strong and tough, these durable steel cables are more than a match for the heavy demands imposed upon them.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

*Mill depots and distributors from coast to coast stock Bethlehem Wire Rope.*

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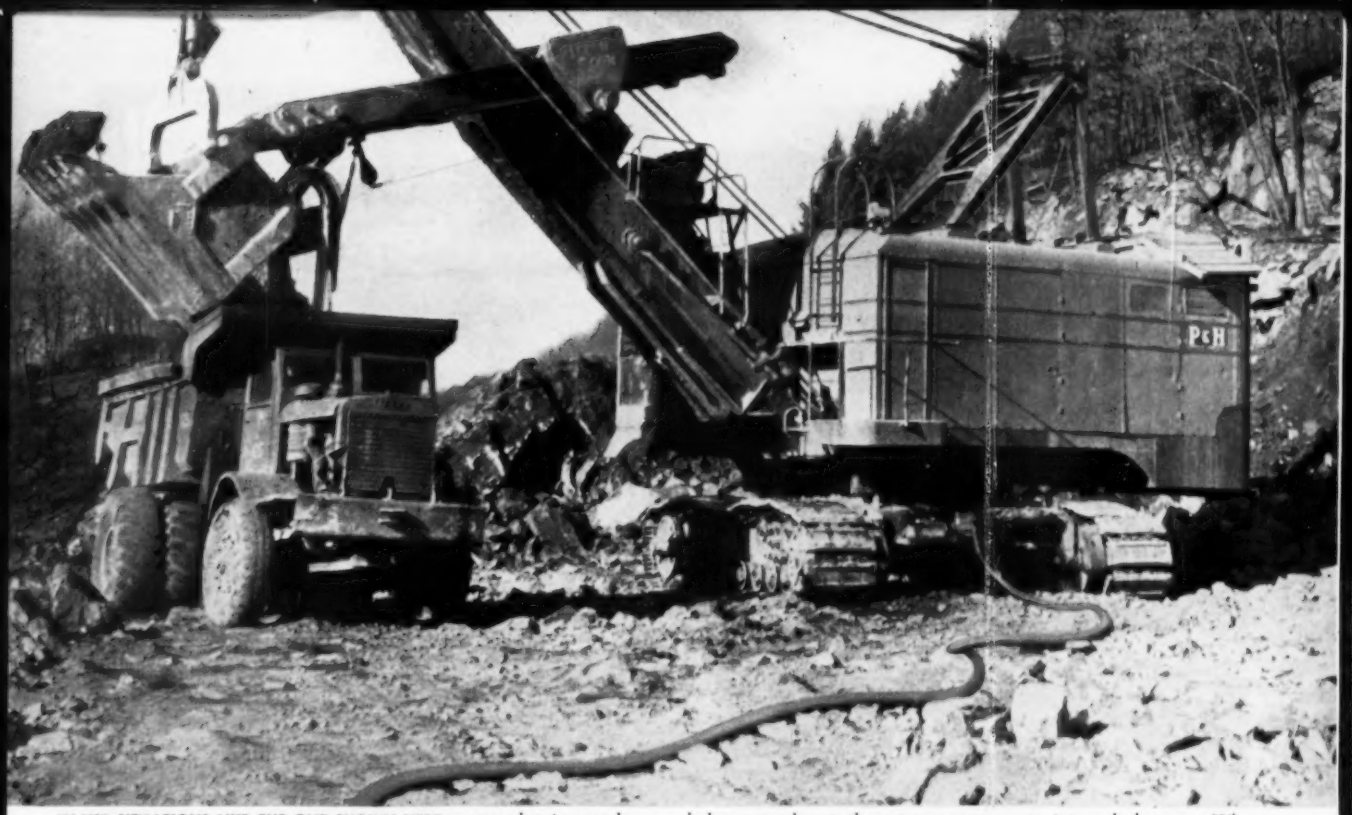
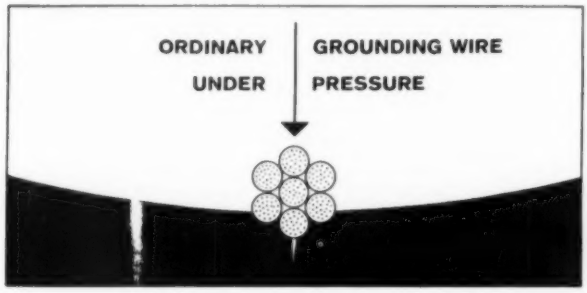
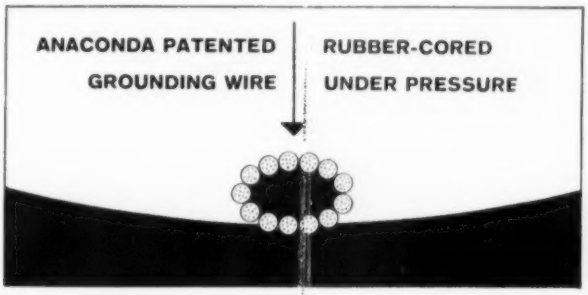



**IN-USE SITUATIONS LIKE THE ONE SHOWN HERE** prove why Anaconda Shovel Cable with its patented rubber-cored grounding wire outlasts ordinary cable. Under pressure, Anaconda's exclusive rubber core helps spread out the pressure—prevents internal damage. When ordinary grounding wires are subjected to the same pressure, the solid cores often cut the insulation.




# Here's why Rubber-Cored Grounding Wires help Anaconda Shovel Cable last longer!

Abuse in service can seriously shorten the life of shovel cable—unless it has built-in protection, such as you find in Anaconda Shovel Cable. For grounding wire failures are one of the most common troubles. See how Anaconda engineers have solved it:

In the diagrams above you see, at left, ordinary grounding wire: a hard, compact group of stranded ropes. And at right, Anaconda patented rubber-cored grounding wire; flexible groups of stranded ropes around a soft *rubber core*.

When great pressure is applied to ordinary grounding wires, the small, hard grouping of wires bites into the insulation. Result: cut and damaged insulation. *But* with Anaconda grounding wires:

- Anaconda's rubber core acts as a cushion and helps spread out the pressure—resisting damage to the insulation.
- Individual conductor strands are protected, too, to resist the kinks that so often are the cause of fatigue failure.
- Anaconda's grounding wires provide broader contact with the shielding making a more positive ground.

For longer lasting shovel cable, see your Anaconda distributor or the Man from Anaconda. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

LIVE BETTER ELECTRICALLY

ASK YOUR **ANACONDA**® DISTRIBUTOR ABOUT **SHOVEL CABLE**

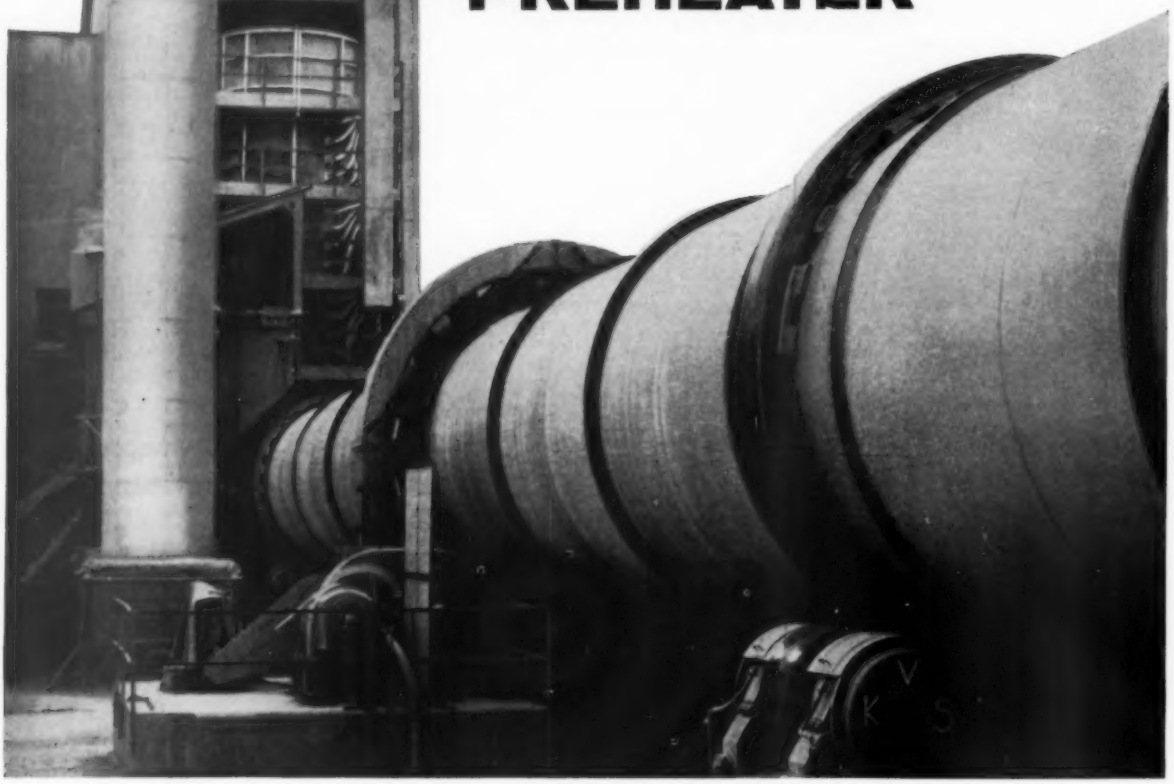
# YOU CAN BEAT THIS

> ... increase *{in cement price}* would not cover the 35-cents-a-barrel rise in costs that resulted from higher fuel oil prices. Cement prices usually are revised at the

(New York Times, December 15, 1957)

with the

# KENNEDY GRUDEX PREHEATER



On dry process cement kilns, the KENNEDY Grudex Preheater can reduce fuel consumption by as much as 40%!

*The KENNEDY Grudex Preheater is manufactured exclusively by KENNEDY-VAN SAUN*

## CONSIDER THESE ADDITIONAL ADVANTAGES

- **Increases kiln capacity.**
- **Requires no elaborate supporting structure.**
- **Less fuel means lower gas volumes to be handled by draft fans and dust collectors or precipitators.**
- **No moving parts are exposed to heat.**
- **Gas and feed are separate—can produce low alkali cement.**
- **Reduces ring formation—extends refractory life.**

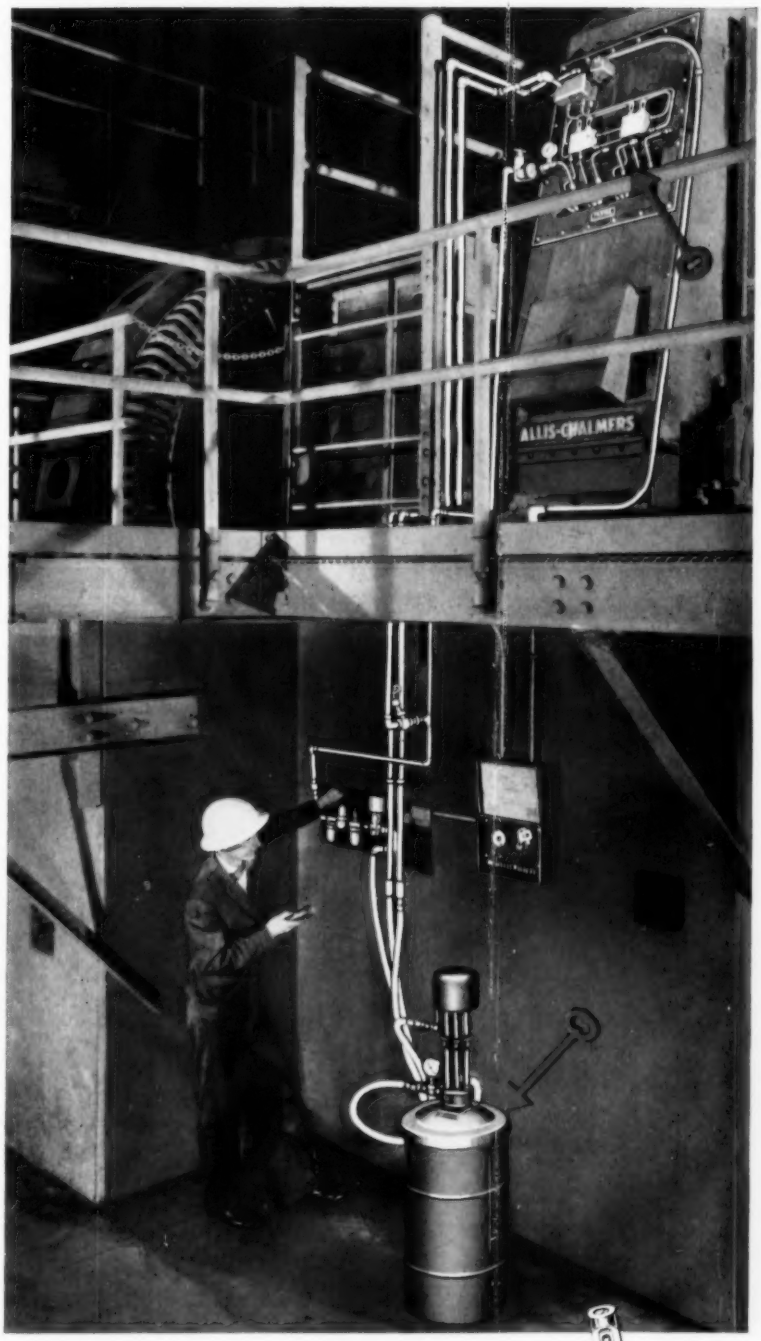
CRUSHERS • MILLS • KILNS • PNEUMATIC CONVEYING
• COOLERS • PULVERIZED COAL-GAS-OIL-FIRING SYSTEMS
• COMPLETE CEMENT PLANTS—WET OR DRY
• KENNEDY RESEARCH AND TESTING SERVICES

## KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N. Y. • FACTORY: DANVILLE, PA.

# Farval spray lubrication system keeps A-C ball mill running smoothly




Inspecting the new installation of a Farval spray lubrication system on an Allis-Chalmers ball mill at Marquette Cement Company's Milwaukee plant is Erv Klovers, project engineer at Allis-Chalmers.

Mr. Klovers' task was to find an economical and dependable lubrication system to guard the large diameter, wide-faced gears that power the ball mill. So he contacted Farval and together we designed the original spray lubrication system for ball mill gearing. It was completely flexible in arrangement and position—fit his requirements to the letter—showed savings in both lubricant and labor costs.

With Farval, gears can be sprayed with the proper lubricant in any amount specified, as often as necessary—without waste or mess.

Hooked up to existing compressed air sources, Farval Spray Valves deliver the lubricant to tooth surfaces through controlled air delivery. Large porting in Farval Dualine valves ensure correct lubricant supply with minimum pressure-drop and very minimum grease separation.

This simple, inexpensive but thorough lubrication system can help you cut maintenance costs as it has for hundreds of others across the nation. See what a Farval system can do for you by asking for Bulletin 26-S. Write The Farval Corporation, 3280 East 80th Street, Cleveland 4, Ohio.

**KEYS TO ADEQUATE LUBRICATION**

**Wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.**

FARVAL—Studies in Centralized Lubrication No. 231

FARVAL
CENTRALIZED SYSTEMS OF LUBRICATION

*Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.*

**Enter Cover 3 on card, page 165**

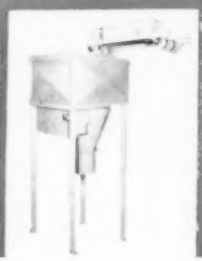
Appearance may be improved through better design, sharper color printing, reproportioning, or better choice of outside wall.

A frank discussion with us may result in a more attractive bag, reduced production costs and increased sales of your product.

When will you talk with our representative?

The Newest **KRAFTPACKER**

will handle any free-flowing material f-a-s-t-e-r, with more accuracy, than any bag filling machine of its type!



**KRAFT BAG CORPORATION**

*Gilman Paper Company Subsidiary*

630 Fifth Avenue, New York 20, N. Y.
Daily News Bldg., Chicago 6, Ill.

Integrated mills at St. Marys, Georgia and Gilman, Vermont

Gilman PAPER CO.

☐ We are interested in improving our bag.
☐ We are interested in your Kraftpacker.

PC

NAME OF COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____ PRINCIPAL _____

PRODUCT MFD. _____

*Enter Cover 4 on card, page 165*